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THE INFLUENCE OF ANTISEPTICS ON THE ACTIVITIES OF LEUCOCYTES AND ON THE HEALING OF WOUNDS.

BY

C. J. BOND, F.R.C.S., HON. COLONEL R.A.M.C.(T.),

HONORARY CONSULTING SURGEON, NORTHERN COMMAND; MEMBER OF THE MEDICAL RESEARCH COMMITTEE; HONORARY CONSULTING SURGEON TO THE LEICESTER ROYAL INFIRMARY.

PART III.—ON THE PRESENCE OF AN IODOPHIL SUBSTANCE IN THE WHITE BLOOD CORPUSCLES IN HEALTH AND IN SOME OTHER CELLS, AND ON THE RELATION OF THIS SUBSTANCE TO PHAGOCYTOSIS AND IMMUNITY.

In the course of this inquiry on Antiseptics, Leucocytosis, and the Healing of Wounds, I have come across certain facts about the iodine reaction in leucocytes and other cells which I think have an important bearing on phagocytosis and immunity. It is, of course, already known that the white blood cells, especially the polymorphs, in some infective diseases frequently give a colour reaction with iodine, which is regarded as evidence of the presence of glycogen in those cells.

The following observations show that even in health a large proportion of the white blood corpuscles normally give, under certain conditions, a colour reaction with iodine, which is closely related to, if not identical with, the so-called glycogen reaction met with in the same cells in disease. The reaction which I am about to describe occurs not only in the white blood cells but in many pus cells, in some of the cellular elements of granulation tissue, in some marrow cells, and in the cells of certain cancerous tumours.

The White Blood Corpuscles and the Iodine Reaction in Health.

If a drop of blood from the finger of a healthy person be incubated for one hour in a Ponder's plasticine cell[1] at 37° C. the white blood corpuscles emigrate out of the clot and adhere to the slide below and the cover-slip above. If the cover-glass and the plasticine cell wall be then removed and the red corpuscles and fibrin carefully washed away with a gentle stream of normal saline, two films of vigorous living leucocytes will be obtained. These films can be mounted in normal saline and a drop of 1 per cent. watery iodine and potassium iodide solution allowed to flow under the cover-slip. All the white blood cells in contact with the iodine will stain a light yellow, but, in addition, a large number (in some fields nearly all) of the cells will show a mauve-coloured exudation of colloid material to one side of the cell. The reaction occurs best in a certain zone of the preparation where the iodine reaches a certain concentration in the saline fluid and where the cells are not stained too deeply by the iodine. Under favourable conditions, the beginning of the reaction can be detected inside the cell. One or more beads of mauve-coloured material collect in the cell, the granular cytoplasm shrinks away from the differentiated protoplasm which forms the boundary wall, the beads run together into larger drops, the limiting membrane ruptures, and the colloidal substance is discharged into the surrounding medium, where it may for a time remain attached to the cell or float away like a coloured oil-drop and eventually diffuse into the surrounding liquid.

Thus far we have described this colour reaction as it occurs in the wet preparation, in the incubated film of emigrated cells to which a watery iodine solution has been added. A second incubated film also freed from clot and red corpuscles is allowed to dry; the leucocytes can then be fixed and stained in iodine vapour, and mounted in iodine gum. The dry film so prepared gives the colour reaction in many of the corpuscles, but in the dry film the iodophil substance takes on a richer stain, and the mauve colour gives place to the mahogany or port wine colour characteristic of glycogen. In healthy emigrated white blood cells the reaction is partly intracellular and partly extracellular, and the iodophil material collects as drops or beads just within or on the surface of the cells. It is already known that in certain diseases a mahogany colour reaction occurs with iodine in some of the leucocytes in a freshly drawn blood film which has not been incubated, and this is an important distinguishing feature, and serves to mark the boundary line between health and disease.

The Reaction is Characteristic of the Polymorph Cells.

The question arises, Which of the different varieties of leucocytes give the reaction in health? This is a somewhat difficult problem, owing to the fact that nuclear stains prevent the iodine reaction, while the presence of iodine also inhibits the nuclear stain. If, however, a film of normal blood be incubated on a ruled slide and subsequently washed and treated with iodine solution, the leucocytes which give and those which do not give the mauve reaction can be mapped out in a certain square, the cover-slip is then removed, the iodine washed away, and the cells stained by some nuclear stain. It will then be found that the cells which gave the mauve reaction are the finely granular polymorph leucocytes. The large mononuclears and the small lymphocytes do not usually give the reaction, and so far I have not detected it in the eosinophil cells. This is true of healthy blood, and is confirmed by the examination of films of incubated blood in disease. In a child aged 7, suffering from a severe lymphatic leukaemia, a blood count gave polymorphs 8 per cent., large mononuclears 1 per cent., lymphocytes 90 per cent., eosinophils 1 per cent.; in this case the number of cells which gave the iodine reaction was much reduced. In certain cases, however, the mononuclears and the lymphocytes may give the reaction. Incubated films from this patient at a later stage of the disease showed a considerable number of lymphocytes with the mauve-coloured exudation. It is known that the glycogen reaction in disease is confined for the most part to the polymorph cells.

The Iodine Reaction in Leucocytes from Aseptic Closed Wounds.

In a former paper[2] I drew attention to the essential similarity of the phagocytic problem in the closed aseptic and in the open septic wound. The leucocytes which collect in such numbers in the pigment thread drain in a surgical incision re-enter the tissue spaces or the circulation as primary union takes place, but these are the same cells in origin as those which are thrown off as dead pus cells in the discharge from an open septic wound.

In the first case nearly all the emigrated cells retain their vitality and re-enter the circulation; in the second most of the cells are killed and thrown off as pus cells; a few only re-enter the circulation. If we tease up in normal saline the leucocyte-covered thread from such an aseptic wound and add a drop of watery iodine 1 per cent. solution, nearly all the cells will show the characteristic mauve coloured reaction. (Fig. 1.) These emigrated leucocytes are in fact vigorous living phagocytes of the polymorph class. They have emigrated from the blood vessels into the wound cavity *in vivo*, just as the white corpuscles in the incubated blood film have emigrated from the blood clot on to the slide *in vitro*. The fact that these emigrated leucocytes give the reaction in both cases, although they do not do so in health while circulating in the blood stream, is important in connexion with the further fact that living pus cells also show the same reaction.

Pus Corpuscles and the Iodine Reaction.

If a drop of pus from a healthy granulating wound be diluted with normal saline, and if a drop of 1 per cent. watery iodine solution be allowed to flow under the cover-glass, a considerable proportion of the pus cells will show the characteristic mauve reaction. (Fig. 2.)

A large number of observations have been carried out on samples of pus from different wounds in various stages of healing and under different conditions of treatment. Pus from certain wounds, when examined on separate occasions, may consistently show a high proportion of cells giving the reaction. Pus from similar wounds infected with the same variety of organisms, showing a like tendency to granulation and repair, may fail to give the reaction, or give it only in a few cells. This difference depends largely on the conditions in the wound.

Stagnant pus—pus which has lain for hours in an undrained pocket, or exposed on the surface of a wound—consists largely of dead cells, whereas the pus which continually flows from a well-drained, healthy wound contains

a large number of living phagocytes, and it is the living cells which, when killed with iodine, give the mauve reaction. The iodine reaction thus affords some indication of the vitality of the pus cells. This is shown in another way. If the sero-pus which collects in the lymph-leech contrivance of Sir A. Wright be examined with the iodine solution, a number of the leucocytes which have been aspirated from the walls of the wound and have collected

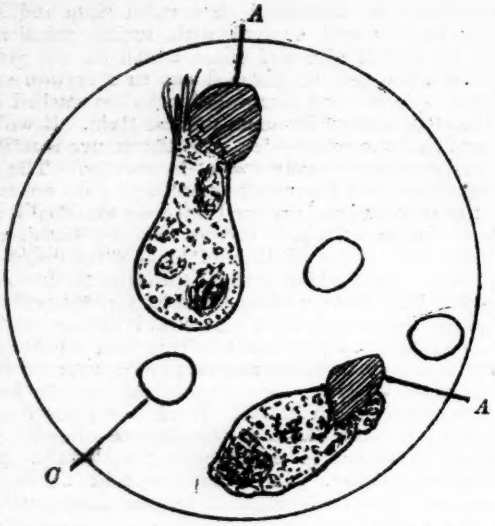

*Fig. 1.—Leucocytes from "phagocyte trap"; aseptic closed incision; fresh preparation in normal saline and 1 per cent. iodine. A, Mauve-coloured iodophil substance; C, red corpuscle. 1/12 im., B oc.

in the tube will be found to give the reaction even when pus cells from the surface of the same wound fail to do so. Pus aspirated from an empyema or an acutely infected knee-joint may fail to give the reaction when first withdrawn, whereas, if the discharge which flows freely from the empyema or the joint cavity be examined a few days later after efficient drainage has been established, quite a number of the cells will show the mauve-coloured exudation.

The capacity to give the iodine mauve-colour reaction depends largely on the vitality of the pus cell and pus

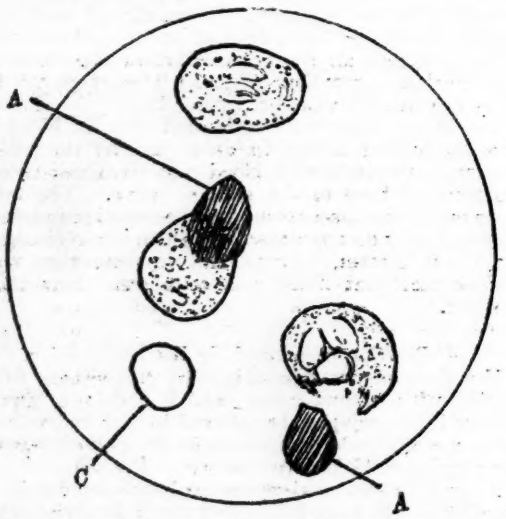

Fig. 2.—Pus cells from healthy granulating wound. A, Mauve-coloured iodophil substance; C, red corpuscle. 1/12 im., B oc.

cells which have lain for some time in a closed cavity in a tryptic medium have undergone partial cytolysis. It is the living leucocyte which has recently emigrated from its natural environment—the blood or lymph stream—which shows the reaction. Of course the conditions to which the cells have been exposed in the wound after emigration are also very important. It is evident that highly concentrated antiseptic solutions which kill the leucocytes will also prevent the reaction, but when these disturbing factors have been eliminated, if a considerable proportion of the pus corpuscles in any wound shows the mauve-coloured iodine reaction, that wound is probably in a healthy condition as far as successful

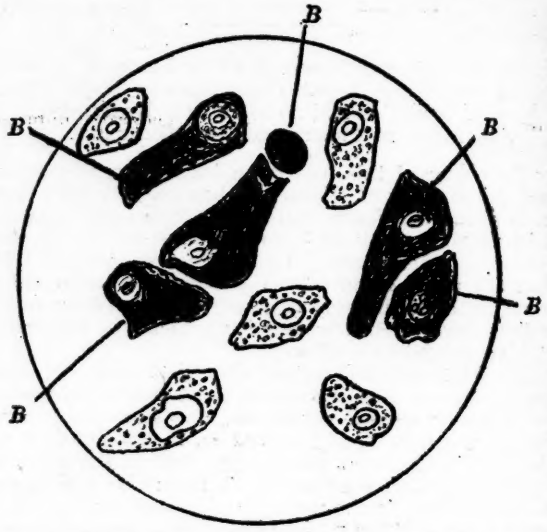

Fig. 3.—Cancer cells from epithelioma of upper jaw; stained 1 per cent. iodine. B, Mahogany-coloured iodophil substance (glycogen). 1/12 im., A oc.

reaction to infection is concerned. On the other hand, the absence of the reaction in any one sample of pus from a wound does not necessarily mean that the whole of that wound is unhealthy. The pus cells examined may have lain for hours on the surface and been killed by exposure, or the sample may have been taken from some stagnant pool in some inefficiently drained pocket.

As in the blood cells, the reaction occurs in the polynuclear pus cells. It is much less marked in the mononuclears and in the lymphocytes. This fact must be borne

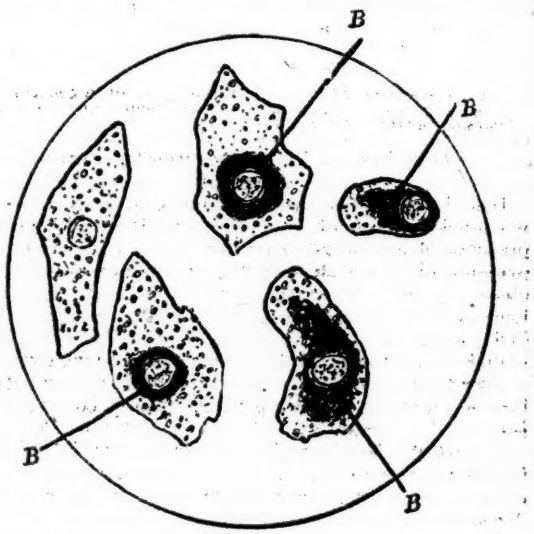

Fig. 4.—Cancer cells from squamous-celled epithelioma; stained 1 per cent. iodine. B, Mahogany-coloured iodophil substance (glycogen) round nucleus. 1/12 im., B oc.

in mind in making use of the reaction as an indication of the healthiness of a wound. The acute stage of infection is marked by a flow of polymorphs, at a later stage the mononuclears are more in evidence, and at this stage the reaction would be less marked.

On the whole, efficient drainage and the establishment of a flow of rapidly renewed phagocytes seems to have more influence on the iodine reaction than the nature of the solutions used in the treatment of the wound.

*These semidiagrammatic drawings are taken from actual microscopic preparations; in each case A (shaded area) represents the mauve-coloured iodophil exudation which in some cases (Fig. 2) has broken away from the cell; B (black area) represents the mahogany-coloured substance (glycogen).

Granulation Tissue and the Iodine Reaction.

It is interesting to find that the iodine reaction is not confined to the cells of the purulent discharge. If a small portion of healthy granulation tissue be removed from a wound and examined in salt solution while alive, and a 1 per cent. watery iodine solution be added, a considerable number of the cellular elements will show the mauve-coloured exudation. The cells which give the reaction are the polynucleated cells; the large mononuclears and the smaller lymphocytes do not show it to the same extent; neither do the fibroblasts and other fixed tissue cells.

The Marrow Cells and the Reaction.

If a small piece of healthy red marrow be examined in 1 per cent. watery iodine solution a considerable number of the marrow cells will show the mauve-coloured reaction. A short incubation at 37° C. will promote this It is shown by the myelocytes of the bird's marrow, but I have not detected it in the frog's marrow cells. Marrow cells, both avian and human, also have a considerable capacity for ingesting pigment both in the body and when incubated *in vitro*. This is important in relation to the marked tendency to latency of infection and to attacks of recrudescent sepsis which are often associated with gunshot wounds of bone.

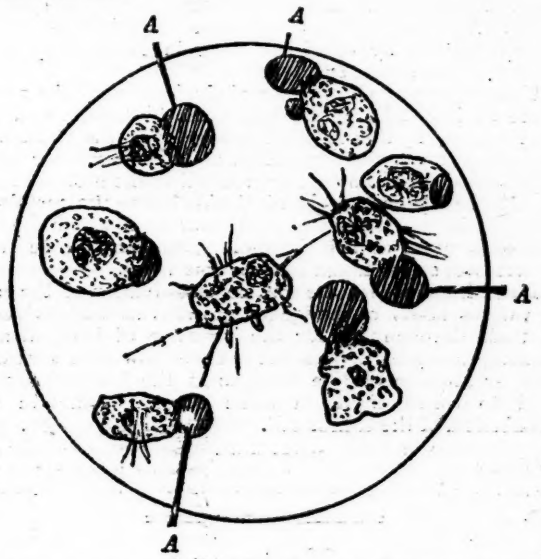

FIG. 5.—Leucocytes from incubated blood during streptococcal throat infection. A, Mauve-coloured iodophil substance exuding from leucocytes. 1/12 im., A oc.

The Nature of the Iodine Reaction in Healthy Leucocytes.

It is, I think, clear from the foregoing observations that we must not regard the colour reaction indicative of the presence of an iodophil substance in leucocytes merely as evidence of a so called glycogenic degeneration, as some observers have supposed. We have seen that healthy leucocytes show a corresponding reaction, and that the distinctness of the reaction—that is, the amount of iodophil substance in the polymorph leucocytes—varies according to the degree of infection. The reaction may take the form of an extracellular mauve-coloured exudation, or of a mahogany-coloured intracellular deposit. In other words, the iodophil substance may exist in the leucocyte in a mobilized form, as in health, or it may be present in a less soluble state, as in some infective diseases.

The question now arises whether this substance which gives the mauve-coloured reaction with iodine in health is chemically the same substance as that which gives the mahogany or port wine colour with iodine in disease. In other words, does the mauve-coloured exudation consist of glycogen? Most observers—Gulland, Wolff, Da Costa, and Burnham—agree that it is the polymorph leucocytes which give the glycogen reaction in dry blood films in septic diseases. We now find that it is the polymorph leucocytes which give the mauve-coloured reaction in incubated blood films in health. Hitherto it has been thought that leucocytes, while circulating in the blood in health, do not give any reaction with iodine, except, of course, the yellow stain. It is quite true that neither wet nor dry films of freshly drawn normal blood give the iodine reaction, but my observations show that a considerable number of the polymorph leucocytes circulating in the blood in health contain an iodophil substance which becomes mobilized when the blood is incubated, and this substance then combines with any free iodine present.

The same is true of leucocytes which have emigrated from the blood vessels into an aseptic wound. The fact that the cells have migrated and are no longer bathed by the blood plasma seems to render the colloid substance accessible to the iodine.

Whether the reaction shall take the form of the more soluble mauve-coloured extracellular exudation, as in the incubated leucocytes in health, or the less soluble mahogany-coloured intracellular deposit, as in some pus cells, and in the white blood corpuscles in certain infective diseases, seems to depend on the presence of a toxin. The toxin renders the iodophil substance more readily accessible to the action of the iodine, with which it gives in combination a more strongly marked colour reaction when in the intracellular form. The mobilization of this iodophil substance in the leucocytes is probably closely associated with the phagocytic function of these cells.

Wolff[3] has suggested that an iodophil substance is present in the circulating leucocytes in health, but that,

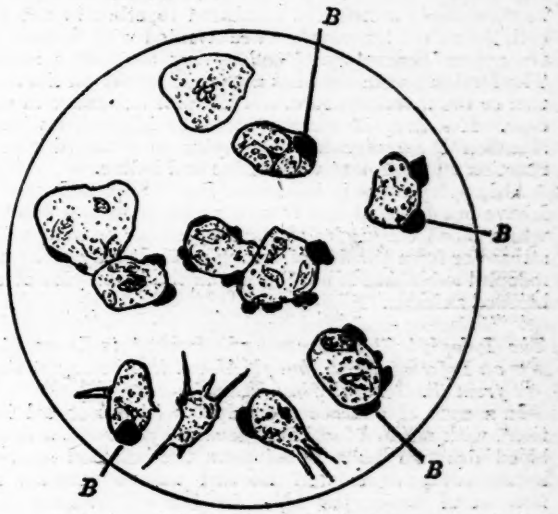

FIG. 6.—Leucocytes from incubated blood (streptococcal throat infection); film dried, fixed and stained with iodine vapour and mounted with iodine gum. B, Mahogany-coloured iodophil substance (glycogen). 1/12 im., A oc.

owing to its extreme solubility, it cannot be demonstrated in a dry film of normal blood, but when rendered more insoluble by the action of certain toxins its presence can be shown. My observations provide an experimental verification of this hypothesis, and show further that the action of a foreign, or at any rate bacillary, toxin is not essential, since the removal of the corpuscles from their natural environment, the blood plasma, will bring about the result. Two films of emigrated leucocytes were obtained from the incubated blood of a healthy person. One film was examined in normal saline to which iodine 1 per cent. solution had been added, and the mauve reaction was obtained. The second film was dried, fixed, and stained in iodine vapour and mounted in iodine gum. Many of the leucocytes in this dry film showed mahogany-coloured beads of colloid exudation. There can, I think, be little doubt, therefore, that the substance which gives the mauve coloured reaction with iodine in the white blood cells in health is either glycogen or a precursor of glycogen, possibly a complex substance, from which, as the result of emigration, the carbohydrate molecule is split off as glycogen, while the protein molecule may be concerned with the elaboration of ferments or antibodies formed by the phagocytes in response to a toxin.

There would seem to be two phases in the response made by phagocytes of the wandering cell type to the action of foreign toxins. The first phase is due to changes in the cell brought about by emigration, and results in the

appearance of an iodophil substance which very readily diffuses out of the cell; the second phase may occur in the phagocytes before emigration, while circulating in the blood stream, and results in the deposit of iodophil material in the cell.

We have already seen that some marrow cells give the mauve-coloured reaction; these are the neutrophil myelocytes, the precursors of the polymorph leucocytes, and, like them, exhibit amoeboid activity and a capacity for ingesting foreign particles.

Cancer Cells and the Iodine Reaction.

Cancer cells from some (but apparently not all) actively growing cancers give the mauve reaction when examined fresh in salt solution and iodine, they also (like some pus cells) give the mahogany reaction when treated with iodine vapour. (Figs. 3 and 4.) Altlough I have failed to obtain any evidence of any capacity in these cancer cells to ingest pigment particles when incubated *in vitro*,* we must remember that cancer cells retain certain embryonic and parasitic characters, and the presence of an iodophil substance in cancer cells may have reference to this parasitic capacity.

The following experiments show that the iodophil substance in leucocytes is not destroyed by foreign serum. If two drops of blood, each taken from a different individual, be thoroughly mixed and incubated together in the same cell, the mixed leucocytes when treated with iodine show the normal percentage of cells giving the iodine reaction. The foreign serum does not act prejudicially on the formation or the mobilization of the iodophil substance in either case. If a drop of normal blood be incubated with egg albumen the emigrated leucocytes so obtained give the reaction on treatment with saline and iodine.

Although present in the leucocytes of birds and mammals I have not detected the mauve reaction in the incubated white blood corpuscles of the frog either from the blood stream or from the dorsal lymph sac. It may be that the iodophil substance is not present in the leucocytes of cold-blooded animals.

The Iodophil Substance may be Present in Leucocytes in an Infected Area though Absent in Leucocytes drawn from the General Circulation.

In a case of cutaneous erysipelas (streptococcal infection), with marked local and general symptoms, a drop of blood drawn from a puncture in the inflamed area (unincubated) gave a well marked mauve reaction in a number of leucocytes when treated with watery iodine solution. A dried film from the same blood, also from the inflamed area, treated with iodine vapour and mounted in iodine gum, showed the characteristic mahogany-coloured (glycogen) reaction. Blood drawn from the finger of the same patient gave no mauve reaction with watery iodine, or glycogen reaction in a dry film.

The occurrence of iodophilia in the leucocytes from the infected area, while absent from the leucocytes in the general circulation, is a point of interest. It suggests that changes of a defensive kind occur in leucocytes while circulating in an infected area, but that after the corpuscles leave this area and return to the general circulation they revert to the normal condition, and cease to show the iodophil change unless the general toxaemia has been too profound. In connexion with this point, however, it is necessary to remember that the leucocytes which give the reaction may have already emigrated from the capillaries into the tissue spaces and lymph channels before mingling with the blood which escapes from the puncture.

The Association between the Iodine Reaction and Infection.

I have recently had an opportunity of observing the effect of a sharp attack of (streptococcal) throat affection on the amount of iodophil substance in my own leucocytes. Having from frequent observation for some weeks ascertained both the percentage of leucocytes which gave the mauve reaction and the amount of iodophil substance poured out in incubated films of my own blood in health, I was in a position to compare these results with the results obtained from incubated blood films taken during the height of the throat infection. (Fig. 5.) Wet films of incubated leucocytes treated with watery iodine solution showed, during the febrile stage, a considerable increase in the number of cells giving the reaction and in the amount of iodophil substance exuded. Films of the same blood incubated, dried, and stained with iodine vapour and mounted in iodine gum showed an abnormal amount of intracellular and extracellular mahogany coloured exudation. (Fig. 6.) Unincubated dried films of the same blood treated in the same way appeared normal. This increased iodine reaction lasted for nearly a fortnight after the temperature had fallen to normal. This observation shows the intimate association between the circulation of bacillary toxins and the occurrence of iodophilia in the leucocytes. It also shows the phases of increased formation of iodophil substance by the phagocytes—first the increase in the extracellular soluble mauve-coloured exudation, then the occurrence of the less soluble intracellular mahogany-coloured deposit. Both these occur before any corresponding change can be detected in the leucocytes in the general blood stream, and they are still present in the incubated leucocytes for some time after the constitutional reaction to the infection has disappeared. This shows the close association which exists between leucocytic activity in response to infection and the formation of an iodophil substance by the phagocytes. A still later stage of this same condition has already been described by other observers in the leucocytes in various septic conditions.

Time alone can show the real significance of the occurrence of iodophilia in the leucocytes in health, and the part played by this iodophil substance in the process of immunization against bacterial, and possibly other toxic substances. It is, however, evident that the problem must be attacked from the chemical side before the metabolic changes in the leucocytes and other cells which lead to the elaboration of this iodophil substance can be fully understood, or estimated at their true value.

I am hopeful that the routine examination of the cells of various kinds of malignant growths at various stages of their development for the presence of iodophil substances, especially undertaken in connexion with the existence or absence of like changes in the leucocytes, may tend to throw light on some obscure points in the metabolism of the cancer cell.

REFERENCES.

[1] *Lancet*, December 12th, 1908. [2] BRITISH MEDICAL JOURNAL, June 3rd, 1916, p. 777. [3] Quoted by Burnham, *Haemocytes and Haemic Infections*.

* Possibly if incubated in blood plasma cancer cells may exhibit pigment ingestive capacity.

Lectures
ON
DISEASES OF THE MALE URETHRA.

BY

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LECTURE IV.—TREATMENT (*Continued*).

GENERAL CONSIDERATIONS, WARNINGS, AND INSTRUCTIONS.

IT is advisable to have at hand a small printed card that will fit the waistcoat pocket. On this card should be printed the following instructions.

A. *General Warnings.*

1. Please remember that until the doctor passes you as "cured" you are infectious to a woman. This is the fact even though you yourself see no sign of urethral discharge. You will think you are cured for a long time before you are really cured, that is to say free from infectious germs.

2. Be careful not to convey discharge on the fingers to the eyes. If you do so you may set up dangerous inflammation and might even lose your sight. If the eyes become inflamed return to the doctor *at once* for examination.

It is wise to buy a small bottle of lysol or listerine from the chemist and to use a teaspoonful of this in a basin of water wherewith to wash the hands after handling the parts in urinating or injecting.

3. Be careful not to use towels which other persons, especially children, are likely to use. Children may contract the disease from infected towels.

4. If you are using a common bath, try to use it after everyone else has finished. Always pass water before taking a bath. In any case add four teaspoonfuls of lysol or listerine to your bath, and wash your face before you enter the bath. Swill out the bath with fresh water after use.

B. *Directions as to Mode of Life.*

1. You must not drink a drop of alcoholic liquor (beer, wine, or spirits) until the doctor gives you permission.
2. You must refrain entirely from any kind of sexual excitement.
3. You should not ride a horse, bicycle, or motor bicycle.
4. As regards diet, you must avoid all things that sting or burn the tongue, such as curry, ginger, pickles, vinegar, horse-radish, mustard, pepper. Meat will not do you any harm. Do not starve yourself. You can fight the disease better if you eat plenty. Your appetite is the best guide.
5. As regards drink, take plenty of fluid, especially plain water, milk, milk and soda, tea, cocoa, lime juice, lemonade, barley water, and the ordinary mineral waters. Do not take any ginger beer or ginger ale, and coffee is best avoided.
6. Smoking is not harmful.
7. During the first three weeks of your trouble the best results can be obtained if you can lie up in bed. Usually this is not possible. If the testicles or joints swell up, or if you are feverish, then it is essential to go to bed. Anyhow, take no exercise and keep as quiet as possible. After the first month you should gradually begin to take exercise again and should try to get fit. Week-ends at the seaside will then prove of great benefit.
8. If you suffer from painful erections while in bed you will find relief if you get up and pass water.
9. It is not wise to stick cotton-wool over the end of the penis. If you wish to avoid soiling your clothes by discharge, get some lint and cut out small pieces, which you can wrap round the organ and tie on with tape or string.
10. Above all, do not worry. If you let the disease get on your mind it will depress your general health and make the disease more difficult to cure. Remember you are not the first man to get this disease, yet the world goes on all right. The disease is always curable, but the cure often takes several months.

GENERAL TREATMENT.

During the acute stage of a posterior urethritis (average five to eight weeks if the patient is up and about) there is no doubt that far quicker results are obtained if the patient can be persuaded to lie up in bed, as by that means the acute stage may be cut short to a period of three weeks. If the patient is in bed less toxin is massaged into the circulation so that the patient's resistance is not overcome by a flood of bacterial poison. The patient also avoids fatigue, and so is better fitted to resist his trouble. When in bed he is far less likely to develop complications. If a patient is sent to bed the acute posterior urethritis often dies down at the end of three weeks, making it possible to begin posterior irrigations and prostatic massage at the end of that period. Many patients are able and willing to lie up for a few weeks, and they should be encouraged to do so. Keep a temperature chart, as it will be found of great help and interest. Let the patient sit in a hot hip bath twice a day. Hot baths act as fomentations.

Drugs.

The disease is usually a local disease, and is most effectively treated by the local application of antiseptic remedies. It has been proved by control experiments that sandalwood oil does not cure the disease. All the same there is no doubt that it often diminishes the discharge and keeps it under control, and it undoubtedly relieves painful micturition. The disadvantages of sandalwood oil are, first, its great expense (one patient of mine had spent £30 on sandalwood oil before he came under my care); secondly, it is apt to upset the stomach and cause pain in the kidneys. I seldom order sandalwood oil except under two conditions: First, when there is greatly increased frequency of micturition and intense pain at the end of micturition (cystitis). Then it acts like a charm. Secondly, in hyper-acute cases, where it undoubtedly soothes the red and swollen mucous membrane of the urethra.

The best form is pure sandalwood oil suspended in tincture of quillaia or mucilage of acacia, and taken as a fluid mixture after meals in plenty of water.

If you wish to order an internal medicine, the best for routine purposes is an alkaline mixture. Potassium citrate in doses of 30 grains, given until the urine becomes alkaline, is, I believe, the best drug. There is little doubt that when cases are doing well they tend naturally to develop alkalinity of the urine which, when passed, may be milky with phosphates. (The milkiness dissolves at once on addition of acetic acid to the urine.) Evidently the gonococcus living in its natural habitat, the human urethra, does not like an alkaline urine. This is why I believe in producing an artificial alkalinity by means of potassium citrate. It is an erroneous notion, widely held, that if the urine is allowed to be alkaline, then there is an increased risk of cystitis. I am convinced, from practical observation of patients, that this is not the case.

Particularly harmful is the exhibition of hexamethylene tetramine. It does not exercise any bactericidal influence on gonococci in the living urethra, and often produces painful micturition when urethritis is present. Formalin in the urine is very irritating to the inflamed mucous membrane.

It is important to keep the bowels well moved by suitable laxatives. Magnesium salts seem to be particularly helpful as laxatives in this disease.

In chronic cases alkalis are not so useful. In these the indication is to increase the general resistance of the body by every possible means. Send the patient to the seaside for two or three weeks, get him to take outdoor exercise, and live amidst cheerful surroundings in the fresh air as much as possible, and let him feed up and get fit. Tonics are now required, such as iron, quinine, strychnine, and arsenic. Above all, keep the patient from brooding over his complaint. Cheer him up. Encourage him to think he is going to get well. Let him realize that you at least have no doubt that he is going to get well. Patients with chronic gonorrhœa tend to be most depressing individuals, and much virtue must go out of the physician who would cheer them up and help them.

TYPE CASES.

I am now about to enter upon the most difficult part of my task. I have described to you the surgical anatomy of the urethra, the clinical pathology of urethritis, methods of accurate diagnosis, and methods and instruments employed in scientific clinical treatment. I shall now endeavour to put into words an account of the different types of cases that will come to you clinically. It is easy enough to take an individual case and demonstrate upon it the diagnosis and treatment suited to that case. It is far more difficult to describe type cases and lay down lines of examination and treatment. Nevertheless, the task must be attempted, as it is necessary to give you a basis on which to found your own experience and practice. Take what I say as a guide to help you. Adapt it as your own intelligence and knowledge serve to the actual patients who come to you in practice. Above all, I do not want to discourage you from trying new methods of treatment. But before trying the new methods I want you to master, first, the accurate diagnosis of the disease, and, secondly, the average results you can obtain by the methods I describe, which I have tried and found satisfactory. You will then have a basis of knowledge of what can be done, and will be able to determine if you are getting better results by your new methods.

Examination.

A case of acute urethritis, duration some days or weeks, with profuse yellow discharge exuding from the meatus. Diagnosis: Either acute anterior urethritis or acute anterior and posterior urethritis.

History.—Note how and when contracted, length of incubation period, previous treatment if any, how many previous attacks, pain, frequency of micturition.

Physical Examination.—Place the patient on a couch, take a film of the discharge, stain, and examine under the microscope for pus cells and gonococci.

Place a pot between the patient's legs and have a large urine glass and a sink handy. Wash out the anterior urethra with mercury oxycyanide 1 in 4,000 until the washings come away quite clear of pus and threads, as tested by pouring them into the urine glass. Now ask the patient to rise and pass water into the urine glass. If the urine is clear the diagnosis is acute anterior urethritis. If the urine is hazy with pus the diagnosis is acute posterior urethritis. (Cystitis as well, if there is greatly increased frequency of micturition and pain at the end of micturition.)

Note, however, that the haze may not be a haze of pus. Determine this question as follows: The haze may be—

1. *Phosphates.*—These disappear on the addition of acetic acid.

2. *Pus.*—A ropiness on the addition of potassium hydrate indicates pus. If in doubt place a drop of urine on a slide, make a film, dry, stain, and examine under the microscope. Pus cells can then be seen.

3. *Bacilluria.*—Place a drop of urine on a slide, dry, fix, stain, and examine under the microscope. Nothing is seen but bacteria.

4. *Sandalwood Oil.*—The patient is taking sandalwood oil. Place a drop of urine under the microscope. Nothing is seen but fat droplets. If in doubt, stop the sandalwood oil and examine again the next day.

5. *Urates.*—The haze disappears on the addition of potassium hydrate. Warm the urine; the haze disappears.

6. *Oxalates* (very rare).—Place a drop under the microscope. Typical crystals are seen.

What is the real object of this examination? It is not meant to determine whether anterior irrigations or anterior injections should be used. These should be used in any case. It is meant for *prognosis*. If the disease is confined to the anterior urethra, the case should get well under treatment in three or four weeks, and possibly in a week. Encourage the patient by telling him this, but make no rash promises. If the disease has spread to the posterior urethra, the disease can hardly get well in under three months. Tell the patient this from the start, so as not to encourage false hopes, and explain the reasons to him. Encourage him if possible to lie up. (It is true that a few exceptions will be met where the posterior urethra clears itself in a week or ten days, and the disease never spreads to the prostate. These cases are lucky exceptions.)

Short Examination if Little Time is Available.

Inspect the meatus and note if the urethritis is very acute or only mild. This will guide you as to strength of injection or irrigation to order—potassium permanganate 1 in 4,000 for acute cases, up to 1 in 2,000 for mild cases.

Ask the patient to pass water into two glasses. If the second is clear, the chances are that the disease has not spread to the deep urethra (proof not absolute). Note this. Then give the patient the printed directions and order a suitable injection or irrigation. Tell him to call in a week or ten days, when you can arrange sufficient time to carry out the more complete test described above.

Treatment.

Give the patient his printed directions, and if the disease has spread to the deep urethra, try and persuade him to lie up. Whatever the state of the disease, whether anterior or posterior, employ anterior irrigations from the very outset. Do not employ posterior irrigations in the acute stage—five to eight weeks in ambulatory cases, three weeks in cases that lie up. The best results are obtained if the doctor himself can irrigate the anterior urethra once a day. Irrigate from a low height (3 to 4 ft.) with the utmost gentleness in ballooning the canal, and suit the strength of the fluid to the severity of the inflammation. In average cases start with 1 in 3,000 potassium permanganate, and as the discharge and pain diminish increase the strength by 1 in 500 until you have reached 1 in 2,000, or even 1 in 1,500. If the discharge and pain diminish, you are doing right; if they increase, you are either using the washes too weak or you should carry out irrigations twice a day. In the majority of cases once a day is sufficient.

ACUTE ANTERIOR URETHRITIS.

In mild anterior cases I often start with 1 in 2,000 potassium permanganate and work up to 1 in 1,500, or even 1 in 1,000, by the fourth or fifth day. Often by the fifth or sixth day there is no discharge and the urine is clear. I then use the urethroscope and look for infected glands of Littre. If not present, the patient is cured; if present, I cure them with the operating urethroscope, and continue irrigations for another five or six days. At the end of that time I use the urethroscope again. If no diseased follicles are seen, cure is complete. Such quick cures can only be obtained in patients who have had the discharge a few days and in whom the disease is not very acute when first seen. I have dozens of such quick cures in my records—that is to say, five to seven day cures in non-follicle cases on washings alone, ten to twenty day cures in cases with infected follicles. Having treated the follicles you must continue with daily irrigations for five to seven days before it is advisable to use the urethroscope again and see if all the follicles have been destroyed; if not, you must operate again, and again irrigate daily for a week and then inspect again.

In the more acute later anterior cases it often takes a fortnight, or even a little longer, of regular daily irrigations or injections to stop all discharge and get the urine quite clear. When that is attained you should proceed to urethroscopy, as described above, to eliminate infected follicles.

If the patient has acute anterior urethritis but cannot come to you for irrigations, then instruct him how to irrigate or inject for himself. Let him irrigate once or twice a day and inject at least twice—and, better, three or four times—a day. Let him report in a fortnight or three weeks for further examination. Many such cases will then be found cured. All such cases, if free from discharge at the second visit, should be urethroscoped. In this way you can detect infected follicles and destroy them if present.

Early Urethroscopy.

The object of early urethroscopy is to answer the question whether these patients, who are discharge-free, are fully cured, or have they the gonococci still lurking in a side track in the anterior urethra. These side tracks are of two kinds:

1. Usually they are found to be infected and swollen glands of Littre. Destroy these with the operating urethroscope, and ask the patient to inject for a week and then report. Urethroscope again. If all the glands are healthy the patient is cured. Often at the second examination there can still be seen a few remaining infected glands; destroy them. Let the patient irrigate or inject for another week and then report. Urethroscope again. In most cases there are no more infected glands to be seen; the cure is complete. Time of cure, two to four weeks.

2. Less often a portion of the canal is seen to be red, swollen, and oedematous, and not to dilate properly under air distension. This is a submucous infiltration or a soft stricture. Treat this by means of Kollmann's dilators applied every fifth day until the normal calibre of the canal has been restored, and the canal can be seen by the urethroscope to be healthy. All this time the patient continues his irrigations or injections. Time of cure, three to five weeks.

ACUTE POSTERIOR CASES.

If, however, you find by your first examination that the disease has already spread to the deep urethra, you will do no good by irrigating the case yourself as you are not going to get an early cure. In such cases instruct the patient how to irrigate or inject for himself, and tell him to use 1 in 4,000 potassium permanganate if the disease is acute, 1 in 3,000 potassium permanganate if mild, and to irrigate twice, or inject four times a day. On no account irrigate the deep urethra at this stage, as it does no good and leads to complications. The object in irrigating or injecting the anterior urethra in early acute posterior cases is to keep down the discharge in the anterior urethra, and prepare for the time when you will be able to irrigate the deep urethra—five to eight weeks in ambulatory cases. It is more pleasant for the patient to be comparatively free of discharge, and you are saving time by getting the anterior urethra into a healthy state. At the end of some weeks the case will enter on the subacute stage.

TREATMENT OF A SUBACUTE CASE.

The patient has had an acute posterior urethritis. Towards the end of some weeks (three weeks if the patient has gone to bed, five to eight weeks if he has remained at work) the severity of the disease begins to die down in the course of nature; that is to say, the discharge lessens and becomes thinner. Pain, burning, and chordee cease, fever disappears, and the patient begins to feel better in himself. Take the case of a patient who has had acute posterior urethritis for some five to eight weeks from the date of the infecting coitus. If he has been under your care at an earlier date he will have been irrigating his anterior urethra regularly, and there will be little if any urethral discharge to be seen. Ask him to pass water into two glasses. The first is certain to contain a fair haze, the second may be hazy with pus, or it may be clear. Now is the time to institute treatment for the deep urethra, but begin with the utmost gentleness, and use weak solutions of your antiseptic wash. At the commencement posterior irrigations should only be carried out by the doctor. Irrigate the deep urethra every day for a week or ten days, or

in the case of out-patients two or three times a week. For the first two or three sittings anaesthetize the urethra with a little 4 per cent. stovaine solution. Then irrigate the deep urethra with 1 in 5,000 potassium permanganate from a height of not more than five feet. Increase the strength each day by 1 in 500 until a strength of 1 in 2,000 has been reached. Most patients will stand 1 in 2,000 after a short time, and their urinary haze will not disappear until this strength has been attained. Some patients' urethras are, however, very sensitive, and will not tolerate concentrations greater than 1 in 3,000. In such cases perseverance at such a strength will remove the purulent haze. Above all, beware of causing intense pain and strangury by your irrigations. If you are doing so you are using too great strengths, or you have begun to irrigate too soon. Another warning is necessary: Do not keep passing several lots of wash into the bladder. Such a proceeding will irritate the bladder. Be content at first if you can only persuade an ounce or two into the bladder. Very soon the bladder will learn to take half a pint quite easily. Flush out the bladder once only, and then let the patient pass the wash out. Use the rest of the wash for irrigating the anterior urethra. Above all, the wash is to be persuaded into the bladder—not forced in by excessive pressure.

During this period of treatment massage the prostate very gently every third day for twelve days. Later on you ought to lengthen the intervals of prostate massage to every fifth or seventh day. Do not try to effect too much at each massage. Do not massage for more than one to two minutes, and let the process be one of peaceful persuasion or gentle stroking. Do not use powerful squeezings. I cannot warn you too carefully on this point.

If you content yourself with posterior irrigation and prostatic massage for a period of twelve to fourteen days you will find at the end of that time in the majority of cases that all purulent haze has disappeared from the urine, and that the urine has become clear, and at most contains a few purulent threads. In other words, the case has entered upon the chronic stage.

Treatment of a Case of Urethritis in the Chronic Stage.

The patient now thinks he is cured. His urine contains a few threads, and there is noticed a little sticking of the meatus, and a slight gleety discharge in the early morning. Warn your patient that it will be at least three to six weeks before he is really cured.

Ask the patient to pass water, and then massage the prostate and examine the discharge under the microscope. Make a rough note of the number of pus cells, large, medium, or minimum. Repeat this examination every two or three weeks, and by this means you can best judge the progress of the case towards cure.

As regards the treatment of the chronic posterior urethritis, you should now discontinue daily irrigations in order to test if the urine will remain clear without such treatment. In most cases, if the patient is keeping the rules, the urine will remain clear, provided you treat the patient every fourth or fifth day yourself. Only three rules of life are now necessary—no alcohol, no sexual excitement, no riding or bicycling. These are the three prostatic sins. The rules as to diet still hold, but encourage the patient to take exercise, feed up, and get fit. Help him to get his mind off his urethra, and let him go to the seaside at the week ends. Every fourth or fifth day let the patient attend for treatment. Massage the prostate, and instil the deep urethra by means of the Ultzmann syringe with strong solutions of silver nitrate, beginning with five grains to the ounce and working up to twenty grains to the ounce. If these cause undue discomfort let the patient go home and sit in a hot bath. Some patients cannot stand such strong treatment. If so, be content with giving, after the massage, a posterior irrigation of 1 in 5,000 silver nitrate. At the end of five or six weeks the prostatic fluid will probably be found free of pus and the posterior urethra is cured.

In cases of chronic vesiculitis, instead of using these instillations, proceed every fifth day as follows: Fill up the bladder with 1 in 5,000 silver nitrate solution, pass a No. 24 Charrière metal bougie. Leave this in for five minutes. Remove the bougie, turn the patient over and massage the vesicle gently but firmly and thoroughly. Let the patient then pass out the irrigating fluid. It will be found to be full of purulent sperm, or even of casts of the vesicles. An infected vesicle, possessing, as it does, a thick fibrous wall and a very small duct opening, needs much firmer massage for its cure than does an infected prostate. For this reason vesicle cases often take four or five months for their cure, and are the most resistant cases of all. Cure is a question of obtaining proper drainage and emptying of the infected vesicle. Cases only do well when the vesicles can be got to empty themselves properly. In such circumstances drainage probably does not take place through the ducts. The ducts become digested by the pus, and a large pathological opening, as of a burst abscess, is formed leading from the vesicle into one side of the posterior urethra. You can see such openings if you use the posterior urethroscope, and can actually see pus issuing from them if you squeeze the vesicle at the same time with a rectal finger. That is the object you have in view in passing the metal bougie. The bougie helps in the formation of a proper opening for drainage. You can detect when you are dealing with a vesicle case by means of tactile rectal diagnosis. The thickened wall of the distended vesicle can be clearly felt in this manner. Give a guarded prognosis in such cases. In some of these cases the purulent haze in the urine is most peristent and lasts for weeks before it yields to massage and irrigations.

The case often begins to do well after the patient has experienced a series of nocturnal seminal emissions, the emitted fluid being found to be greenish-yellow, or even blood-stained. This is a sign that the abscess has burst into the deep urethra. Failing the formation of such an opening, the duct of the vesicle sometimes gets blocked altogether, and may remain blocked for months or even years at a time. The urine then gets quite clear, and the patient thinks he is cured. He may go months, or even years, without a relapse of yellow discharge, yet sooner or later excessive indulgence in alcohol or coitus, or depression of the general health, may lead to the bursting forth of the vesicular secretion afresh, and a sudden apparently inexplicable appearance of profuse yellow urethral discharge. These facts I have just mentioned will account for those curious cases we see where a man suddenly develops urethritis when he has not been with a woman for a long time. Such a phenomenon sometimes occurs in married men whose wives remain perfectly healthy.

Resistant vesicle cases, if persistence in treatment after three or four months does not result in cure, should be submitted to the operation of vasotomy, by which it is possible to wash out the infected vesicle and bring about a rapid cure.

Chronic Anterior Urethritis.

During the same period, when you are carrying out the treatment of the posterior urethritis as just described, you should also employ the time in curing the anterior urethra. This can only be done by an intelligent use of the aero-urethroscope.

Once the urine is clear, therefore, lose no time; urethroscope the anterior urethra, as there may be lesions in the anterior urethra which need attention. If these consist of infected follicles, destroy them once a week with silver nitrate fused on to the operating probe.

If, on the other hand, these consist of submucous infiltrations (soft strictures), fill up the bladder with silver nitrate 1 in 5,000, and pass metal bougies of suitable size until you can pass a No. 24 Charrière with ease. Now begin to use Kollmann's dilators every fifth or seventh day—the straight Kollmann for a stricture in the penile urethra, the curved Kollmann for a stricture in the bulbous urethra. Use as an irrigating fluid either silver nitrate 1 in 5,000, or, if this stings too much, use oxycyanide of mercury 1 in 4,000. Increase a millimetre or two at a time until you have attained a No. 45 Charrière in the bulb, Nos. 30 to 35 in the penile. If a soft stricture is present you cannot obtain a cure of the gonorrhoea without these instruments, and at the same time you will be saving the patient from developing a fibrous stricture in later years. Control the dilatations by periodical urethroscopy.

Note on the Treatment of Strictures.

A Stricture can only be Diagnosed by using the Urethroscope.

By this instrument you can see and judge how small or how large the opening is, and the nature of the stricture.

whether soft or fibrous. (A) If fibrous and almost pinpoint, start dilatation with gum-elastic bougies. The first time you will probably get in 1, 2, 3, 4 Charrière, the next time 4, 5, 6, 7, the next time 7, 8, 9, 10, the next time 10, 11, 12, 13, 14, the next time 14, 15, 16, the next time 16, 17, 18 Charrière.

When up to 18 Charrière proceed with your nickel bougies and work up on these till the meatus (24 to 28 Charrière) will not let you use them any more. Then start with the Kollmann's dilators. If the stricture is in the bulb, work up with these to 45 Charrière; if in the penile, work up to 30 or 35 Charrière. Then tell the patient to come back for urethroscopic inspection in six months' time. In the large majority of cases cure will be found to be permanent if dilatation has been carried out to these high degrees. (B) If you find a tunnel stricture that you can feel from the outside, or if you find that the stricture will not dilate up any more than to 8 or 9 Charrière, then take the patient into the hospital for internal urethrotomy. In actual practice only a few cases will require this operation.

There is no mortality from dilatation, but the mortality of internal urethrotomy may be as high as 4 to 5 per cent. When the patient comes out after an internal urethrotomy, go on dilating with nickel bougies and then with the Kollmann's dilators as above.

The Routine for Passing Bougies.

The patient passes water. Fill up the bladder with oxycyanide of mercury solution 1 in 4,000 or silver nitrate solution 1 in 5,000 by Janet's method from a height; lubricate and pass the bougies. The patient then rises and passes out his irrigating fluid.

After the passage of bougies and Kollmann's dilators warn the patient—

1. That he may bleed a little for twenty-four hours.
2. That he may have urethral discharge for twenty-four hours.
3. That it will hurt him to pass water for twenty-four hours.

Warnings.

Never forget that the object of dilatations of all kinds is not to tear the stricture or tear the urethra, but to tire out the stricture as rubber is tired. You will find that absorption of the stricture goes on between the treatments by phagocytosis on the part of the tissues. If you tear, this process does not go on, but the stricture becomes more resistant. Never dilate more than twice a week, and usually once a week or once in ten days is sufficient.

SALVARSAN TREATMENT OF SYPHILIS:

AN ANALYSIS OF TWO HUNDRED CASES.

BY

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AND

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BETWEEN May 22nd, 1916, and September 24th, 1916, we have treated at hospital 200 cases of primary and secondary syphilis by intravenous injections of salvarsan and intramuscular injections of mercury, and in view of the probability of this treatment being extensively employed by members of the medical profession in many centres, we think that our results and experiences may be of use.

The method we have employed is that laid down by the War Office. It is divisible into three parts:

A. Comprised of first to eighth week: Eight doses of 1 gram of mercury; 2.8 grams of salvarsan. Time occupied, fifty-two days.

B. Fourteen days' potassium iodide.

C. Comprised of eleventh to thirteenth week: Three doses of mercury; 1.2 grams of salvarsan. Time occupied, fifteen days.

The full course of treatment is as follows, in accordance with instructions contained in War Office letter dated May 8th, 1916, No. 24 General 4912. (A.M.D.2.)

COURSE A.

First Week:
2 doses salvarsan (0.3 gram).
1 dose mercury.

Second Week:
1 dose salvarsan (0.3 gram).
1 dose mercury.

Third Week:
1 dose mercury.

Fourth Week:
1 dose salvarsan (0.4 gram).
1 dose mercury.

Fifth Week:
1 dose salvarsan (0.5 gram).
1 dose mercury.

Sixth Week:
1 dose salvarsan (0.5 gram).
1 dose mercury.

Seventh Week:
1 dose salvarsan (0.5 gram).
2 doses mercury.

The above course of treatment, as will be seen later, is not given to all patients, as B and C are merely extensions of Course A, and in a large percentage of cases we have found that the desired results—that is, a negative "Wassermann" reaction and absence of all clinical signs and symptoms—have been obtained by the end of Course A. If the "Wassermann" reaction is still positive at the end of Course A, potassium iodide in 10 grain doses, three times a day for fourteen days, is then prescribed. If still positive, Course C is given.

The Cases Treated.

Practically all the cases from which these results have been obtained were conclusively shown to be syphilis by (*a*) the "Wassermann" reaction being positive, or (*b*) the presence of *Spirochæta pallida* in either primary sore or secondary rash.

None were treated on a purely clinical diagnosis, unless the signs put the diagnosis beyond all doubt.

The Results Obtained.

The 200 cases were composed of 125 primary and 75 secondary; not picked cases, but the first 200 treated with the course.

At the end of Course A, of the 125 primary cases, 16, or 12 per cent., still showed a positive "Wassermann" reaction, and 109, or 27 per cent., showed a negative "Wassermann" reaction. Of the 75 secondary cases, 43, or 55 per cent., still showed a positive, and 32, or 45 per cent., a negative "Wassermann" reaction.

Of the 43 secondary cases showing a positive reaction at this point, 16 ceased treatment for the following reasons: 11 were showing signs of marked stomatitis, having had large quantities of mercury before this course, 3 had marked albuminuria, 1 refused more treatment, and in 1 the treatment was stopped owing to the violence of the reaction.

At the end of Course B (potassium iodide) the following results were obtained:

Of the 16 primary cases with a positive reaction, 6, or 38 per cent., still showed a positive, and 10, or 62 per cent., showed a negative "Wassermann" reaction; 2 of these 6 cases ceased treatment owing to stomatitis.

Of the 27 secondary cases with a positive reaction, 16, or 59.3 per cent., still showed a positive, and 11, or 40.7 per cent., showed a negative "Wassermann" reaction.

At the end of Course C (further treatment with 1.2 grams salvarsan and 3 grams mercury) the following results were obtained:

All the primary cases, which numbered 4, showed negative reactions, and of the 16 secondary cases 10, or 62.5 per cent., were still positive, and 6, or 37.5 per cent., were negative.

Of the 200 cases which started treatment, 182 completed the full course where necessary. Of these, 172 had negative "Wassermann" reactions—namely, 123 primary, or 98.4 per cent. of those starting, or 100 per cent. of those completing the full course, and 49 secondary, or 65.3 per cent. of those starting, or 81 per cent. of those who completed the full course.

As would be expected, the primary stage shows a much higher percentage of negative "Wassermann" reactions after treatment than the secondary stage. We think it probable that a certain number of the secondary cases may show a negative reaction in a short time, as the final blood tests were taken directly the course had finished.

The Reactions.

The reactions shown by the patients under treatment with salvarsan twenty-four hours after having had the injection may be grouped under three headings: I, Mild;

II, Severe; III, Local. After 36.6 of the injections, there were no reactions.

The figures used here are obtained from the 200 cases already quoted, and in all 1,320 injections were given.

GROUP I.—*Mild Reactions.*

In the first group (mild) we include:

1. Headache: 27.3 per cent. of injections.
2. Diarrhoea (two or three loose stools in twenty-four hours): 29.3 per cent.
3. Vomiting some time after injection: 15.3 per cent. of injections.
4. Abdominal pain: 18.4 per cent. of injections.

This group can be dismissed with few comments. A large factor entering into all these symptoms is neurosis, and, together with improper dieting, may be considered to cause 50 per cent. of the reactions met with in this group.

GROUP II.—*Severe Reactions.*

In the second group (severe) we include: (1) Cardiac, (2) respiratory, and (3) central nervous symptoms, (4) vomiting at once, (5) rash, (6) rigors, (7) severe diarrhoea, (8) albuminuria.

These symptoms require more careful consideration and explanation, and are certainly more alarming, especially if met with by a practitioner dealing with few cases. The percentage shown is not large, but is large enough to be disconcerting if met with in a small number of cases.

Cardiac and Vascular.—(*a*) Flushing of the skin, and widespread vascular dilatation. These effects we are inclined to attribute to the effects on the vasomotor centre, the tachycardia being secondary, as during the exhibition of the nitrites. (*b*) Tachycardia, apparently secondary to the vascular changes above referred to; the pulse rises to 130. (*c*) Bradycardia precedes or follows the previous condition, and is frequently accompanied by vomiting, and sometimes by coughing. We are inclined to attribute this effect to stimulation of the vagus or its centre. The pulse is sometimes at the same time irregular. The patient at this time complains of dyspnoea, and the hand is often used to indicate distress referred to the upper part of the sternum. He seems often muddled, and may become partly or wholly unconscious.

Respiratory.—Respiratory difficulties are for the most part subjective—a feeling of dyspnoea—but paroxysmal cough is common, from a slight attack of a few coughs to severe paroxysms. Symptoms were noticed in one case which started as soon as the fluid was run in. The first sign was shortness of breath leading to a semicomatose condition, quickly followed by a dry, hacking cough, which continued for some minutes after the injection was stopped, and then passed away, leaving a feeling of weakness and marked pallor.

Central nervous symptoms are met with seldom, but may take the form of loss of consciousness at once or after getting off the table, or in some cases some time after injection. In one case we observed a transient hemiplegia, which lasted for three days and then disappeared; the man recovered completely in a week and showed no more reactions of any kind during the rest of the treatment.

Vomiting.—Immediate vomiting seems to be akin to the paroxysmal cough, starting as soon as the injection is commenced. This condition we met on several occasions, three times in the same man, who was of rather a nervous temperament; he finally had to stop treatment owing to the fierceness of his reactions. He exhibited at different times upon the table vomiting, flushing, slow pulse, semi-consciousness, and finally all four at the same time. His treatment was suspended.

Diarrhoea may be troublesome, and some patients suffered from a muco-colitis, with the passage of blood-stained mucus for a few days.

Rashes.—We have met three types: (*a*) Erythema, either local or general; it usually passes off in from a few hours to a day or two, but great care must be taken in these cases to graduate the doses, or else an acute dermatitis may be set up. (*b*) Urticaria, which quickly disappears, usually only lasting a few hours. (*c*) Herpes, facial or labial, is not uncommon. Apart from the purely local conditions, we had one case which at the end of treatment, and five days after his last injection, developed acute exfoliative dermatitis. Starting as an erythema on the dorsal surfaces of the feet and the palms of the hands, it quickly spread over all the body, face, neck, and into the hair, and became pustular; under treatment with starch baths, it healed up, leaving very little scarring.

Rigors usually appear from two to six hours after injection, and last for about twelve hours. The temperature runs up to about 100° to 102°, but the patient is usually quite well in the morning.

Albuminuria appears in a few cases during and directly after treatment, but passes away when treatment ceases. In some cases with albumin in the urine before starting treatment we have noticed it disappear after one or two injections.

The percentages of severe reactions were as follows:

	Per cent. of injections.
Cardiac	0.53
Respiratory	0.53
Central	0.53
Diarrhoea	0.7
Rash	5.3
Rigors	9.9

To account for these symptoms is not easy in all cases, but the following are factors to be considered:

1. The temperature of the solution injected. Excessive variation from blood temperature on either side is to be avoided.
2. The alkaline reaction of the solution is to be carefully noted. Excessive alkalinity will give rise to unlooked for symptoms.
3. Injection of air into the veins, even in minute quantities, is dangerous.
4. Small clots may form in the needle owing to back pressure if great care is not taken to wash the needle through well after giving an injection, and before using it again.
5. A full stomach. In one case we found that the man had been eating a large quantity of cakes just before injection.
6. All water must be freshly distilled, as failure to attend to this may lead to increased reactions.
7. The temperature of the injection room should be about 70° F., and the patient covered with a blanket.

Another point of interest, but not of clinical importance, is that towards the end of treatment acute neuralgia occurs during injections of salvarsan, due in all probability to the fact that the gums are inflamed by mercury, although they may show no outward signs of inflammation. The pain quickly passes away at the end of the injection, and leaves no after effects.

GROUP III.—*Local Reactions.*

Local reactions may be summed up and explained in nearly all cases by faulty technique. The conditions which may be seen are: (*a*) Local bruising, (*b*) haematoma, (*c*) lymphangitis, (*d*) abscess formation, (*e*) necrosis, (*f*) thrombosis.

The first two (*a*) and (*b*) are both due to the operator injuring the vein to a lesser or greater extent at another point to that through which he finally introduces the needle. This can be avoided by introducing the needle through the skin first, and then passing it through the lateral wall of the vessel. By this means the vein does not slip away from the needle point, as it has a tendency to do if an attempt is made to get into the lumen in one motion from above.

Lymphangitis appears in a very minute percentage of cases, and if care is taken it should never occur. In our opinion it is due to local infection. Abscess formation at the seat of injection, again, is due to lack of local antiseptic precautions, and not having the apparatus sterile.

Necrosis at the seat of injection, which we are pleased to say we have not experienced, is due to allowing the injection to run into the cellular tissues around the vein. This can be avoided by first running in distilled water to make sure that the needle is in the lumen. If by chance the needle slips out during injection, owing to the patient moving, it is best to take a scalpel and open over the swelling and thoroughly clean out any solution loose in the tissue. The incision made will heal much more speedily than the necrosed area that will otherwise appear.

Thrombosis is due, we think, in a large percentage of cases, to rough usage, especially in cases where difficulty has been experienced in getting the needle into the lumen, or when too many doses have been given into the same vein. Great care should be taken not to try to give another dose into the thrombosed vein. Some men show a

marked susceptibility to thrombosis. One man whose veins were easy to puncture had a local thrombus after each injection. Soft thrombi sometimes form during the injection, and it is then dangerous to proceed. One first sign of local thrombosis in such a case is hindrance to the flow from the needle.

GENERAL OBSERVATIONS.

1. The general tone and appearance of the patient improve so markedly after one or two injections of salvarsan, and the primary sore so soon disappears, that the practitioner may be persuaded by the patient to stop treatment. We have seen several cases in which this has occurred, with the result that a very early relapse has taken place. Care should be taken to continue the treatment until all clinical signs have disappeared and the blood reaction is negative.

2. The speed with which primary sores, secondary rashes, and condylomata disappear is worthy of note; two or three injections will usually remove all outward signs.

3. The effect of salvarsan is not so speedy in cases in which the mucous membranes of the mouth and tonsil are affected, nor in glossitis, and they do not usually heal until the blood has got to a negative phase.

A SIMPLE DIETETIC TREATMENT IN DIABETES MELLITUS.

BY

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WHEN the ordinary dietetic treatment fails to check the glycosuria in cases of diabetes mellitus we have now many new methods of treatment which, temporarily or permanently, are of distinct service. Some of these methods have, however, disadvantages, and occasionally are followed by very unpleasant symptoms.

I desire to draw attention to a simple method of dietetic treatment which I have found of the greatest service, in many cases of diabetes, in checking the glycosuria, at least temporarily. It is free from risk, quite palatable, and can be taken by almost all patients. It is worthy of trial in most cases of diabetes if the ordinary diabetic diet does not promptly check the glycosuria.

The treatment lasts for a week or ten days only; during this period the patient ceases work and rests on the sofa. Every two hours from 8 a.m. to 10 p.m. he receives a small amount of food—eggs, cream, milk, beef-tea, and tea—according to the following diet sheet.

Diet.

8 a.m.—Coffee, or tea, with one tablespoonful of cream. One egg (poached, boiled, or buttered).
10 a.m.—A glass of warm milk (half a pint).
12 noon.—Custard (prepared from one egg and half a pint of milk).
2 p.m.—A glass of warm milk (half a pint).
4 p.m.—Tea, with one tablespoonful of cream. One egg (poached, boiled, or buttered).
6 p.m.—Cream, two tablespoonfuls, in half a pint of warm beef-tea.
8 p.m.—A glass of warm milk, or one egg beaten up and added to half a pint of warm beef-tea.
10 p.m.—Cream, two tablespoonfuls, in half a pint of warm beef-tea.

The order of these meals may be varied or slightly modified as the patient desires. The patient takes no other food. The bowels are kept regular.

In many cases the glycosuria ceases in a few days, in other cases in a week or ten days, although an ordinary rigid diabetic diet had failed to check the sugar excretion. If the sugar excretion does not cease on this diet of eggs, cream, milk, and beef-tea, carried out as just described, in the course of a week or ten days, I discontinue it and try some other method of treatment. After the glycosuria has been checked I change gradually, at the end of seven or ten days, to a diet of solid food. First, a little diabetic bread* is allowed with the tea and egg at 8 a.m. and 4 p.m., and two of the other meals are diminished or omitted. Then a day or two later bacon and green vegetables are allowed, followed by custard, in place of the meals at 12 noon and 2 p.m., and the meals at 10 a.m., 6 p.m. and 8 p.m. are omitted, and the tea and egg taken at 5 p.m. instead of 4 p.m. If the glycosuria does not return then the bacon at midday dinner may be replaced by fish, and later by fowl or meat. Later the ordinary diabetic diet may be allowed, and still later, if no sugar returns in the urine, a small amount of white bread may be given.

Of course, this treatment for a week or ten days with the diet of eggs, cream, milk and beef-tea, in the manner just described, does not remove the glycosuria in all cases of diabetes; but it is interesting to note how often it will do so, when a previous treatment with the ordinary rigid diabetic diet has entirely failed to check the sugar excretion.

If the glycosuria returns at a later date, the patient may try again for one week the diet of cream, eggs, milk and beef-tea, and repeat it from time to time, if necessary.

The permanent value of this treatment cannot yet be estimated, but it is a method which is more prompt and powerful than the ordinary rigid diabetic diet.

In the BRITISH MEDICAL JOURNAL of March 13th, 1915, I published a method of treatment with casein or biogene (mixed with cream and water) which I had found of great service. Since that date I have used this method very frequently and often with excellent results, and my further experience has confirmed the opinion I then expressed as to its value. It requires, however, to be carefully watched, and, as I previously pointed out, it occasionally causes unpleasant symptoms, which can, however, soon be checked. Occasionally bad specimens of casein or biogene are obtained which cannot be taken by the patient, and occasionally a case is met with in which a satisfactory preparation of casein or biogene is most unpalatable to the patient and cannot be taken. The casein preparation known as Laitproto No. 6† may then be tried in place of casein, and in the same quantity, and may be well taken. If this should be very unpalatable and cannot be taken, the method of treatment with milk, cream and egg described in this article can almost always be taken quite well.

The dietetic treatment (with cream, eggs, milk, and beef-tea) just described is (1) simple; (2) less expensive than diabetic breads and foods, and specially suitable now on account of the increased price of diabetic foods through the war; (3) it can be taken by nearly all patients, and is quite palatable; (4) it can be taken by patients who cannot take casein or biogene; (5) it does not require any very special care or watching; (6) it is very useful and suitable in the case of diabetic children; (7) it is often very successful, and often removes the glycosuria when an ordinary rigid diabetic diet has failed; in other cases, like all other treatments, it is not successful; (8) after taking this diet for seven or ten days the patient may then often take an ordinary rigid diet, and continue it for a long period without the return of the glycosuria, whilst previously such a diet had entirely failed to check the glycosuria; (9) in some cases it removes the diacetic acid as well as the sugar, but not in many others; (10) probably it is not so often successful as the treatment with casein or biogene (which I have previously published), but if it should fail, the latter treatment may then be tried, or a combination of the two methods may be tried.

The dietetic treatment described in this article should be continued for seven or ten days only. It is to be regarded as a method usually very much more successful than an ordinary rigid diabetic diet in removing the glycosuria temporarily, and its after-effects probably continue much longer. If later the sugar returns in the urine the treatment may be repeated. The earlier the treatment is tried the more likely is it to produce satisfactory results. It is worthy of trial in most cases of diabetes if the ordinary rigid diet does not check the glycosuria in one or two weeks.

* Biogene bread and ponos biscuits, protene bread, etc., or the coconut and biogene, and other cakes which I have described in the BRITISH MEDICAL JOURNAL, December 23rd, 1916.

† Laitproto No. 6 can be obtained from Casein Co., Limited, Sheepcote Lane, Battersea, London, S.W.

DR. LANPHIER VERNON-JONES, of Arlington Street, S.W., left £16,808.

AT the first meeting of the American Congress on Internal Medicine, held in New York on December 28th and 29th, 1916, an American College of Physicians was founded. Sixty-five physicians were elected Fellows.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SUDDEN DEATH FROM APOPLEXY.

SUDDEN deaths are not so often attributed to a "stroke" as they were a few years ago. Heart failure figures now much more frequently, and in the overwhelming majority of cases it is the truth. When one meets with quite a sudden death from a cerebral lesion it seems worth while recording.

A female, aged 62, had had a trace of albumin in the urine for several years. In 1908 she suddenly lost power in the right arm and hand, almost if not complete at first. The speech was only affected in as far as it was an effort to explain anything. In January, 1917, she had been entertaining friends in conversation all the afternoon, and just after tea became suddenly unconscious. Arriving a few minutes later I put her flat on the floor and found the heart sounds present. They improved with artificial respiration, but no air entered the lungs. There was no pulse at the wrist, and the heart sounds disappeared in half an hour from the attack. Some colour at first returned to the face; the pupils were moderately dilated. I imagine the immediate cause of death was cerebral haemorrhage involving the respiratory centre. The patient had homœopathic tendencies, and had not consulted me about her general health for some years, hence the paucity of the account I can give of signs and symptoms. She had lost flesh, and always looked more or less pale and unhealthy. No *post mortem* examination was allowed.

I have never before known a case of apoplexy prove fatal until after many hours had elapsed.

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A NOTE ON ACIDOSIS.

THE recent communications on acidosis in children by Dr. Campbell Stark and Dr. Pinson induce me to put on record some observations of my own on this subject.

When I was resident medical officer at the Children's Infirmary, Liverpool during 1915, many children, including babies, were admitted suffering from burns and scalds. The majority died even under the best local treatment, and some of those who succumbed had been only slightly burned or scalded in perhaps one limb.

Those who died presented the following symptoms: Within twenty-four hours of the accident, even when the child appeared fairly well on admission, there was a rise of temperature to 100° or 101° F.; the patient then became listless, with persistent vomiting, gradually becoming more and more drowsy, and usually within three days died from exhaustion.

In some of the cases I noticed the odour of acetone in the breath, and the urine by examination was found to be very acid and to contain a large quantity of acetone. After this, in every case of burns or scalds, in addition to the local treatment, I prescribed twenty grains of sodium bicarbonate and one drachm of syrup of glucose in one ounce of water every four hours, also small quantities of brandy when there was great prostration. The acetone disappeared from the urine in a few days. The mortality-rate greatly diminished.

There was one very striking case which has been impressed on my memory. A child, not quite a year old, was admitted to hospital almost immediately after being severely scalded; a catheter specimen of the urine was at once obtained and it was found to contain a large amount of acetone. It appears to me that this acidosis has much to do with the fatal issue, and this is borne out by the alkaline treatment reducing the mortality. The cause of the acidosis in these cases is evidently not dietetic, but it may be probably due to the nervous shock, and possibly, to some extent, to the suppression of the excretory function of the skin.

Liverpool. R. J. MINNITT, M.B., Ch.B.

LIEUTENANT-COLONEL ARTHUR NIMMO WALKER, of Liverpool, who was killed in action on September 24th, 1916, left £8,905.

Reports of Societies.

TOXIC JAUNDICE IN MUNITION WORKERS AND TROOPS.

AT a combined meeting of the Sections of Medicine, Pathology, and Epidemiology of the Royal Society of Medicine on January 23rd, when Surgeon-General H. D. ROLLESTON, R.N., was in the chair, a discussion on the origin, symptoms, pathology, treatment, and prophylaxis of toxic jaundice observed in munition workers and troops was opened by Dr. T. M. LEGGE, H.M. Inspector of Factories.

Incidence and Prevention.

Dr. T. M. LEGGE said that, in the early stages of the war, it looked as though poisoning by dope, which contained 12 per cent. of tetrachlorethane, was going to be formidable; 19 cases were detected in one factory in quick succession. That the tetrachlorethane was the culpable ingredient of dope had been shown experimentally by Dr. W. H. Willcox; the plenum system of ventilation then in vogue in the workshops was unsuitable. The danger had been combated by periodical medical examinations, installation of exhaust ventilation, and frequent changes of employment. The tetrachlorethane had now been replaced by a substitute which was safe. From first to last about 70 cases had been heard of, with 12 deaths. Concurrently two or three cases of toxic jaundice due to T.N.T. occurred, and this form of jaundice was made notifiable. At first only a few cases occurred, then with an intensification of the work, which coincided with the hot weather, there were more; later, in the last two months, there were fewer cases again. The incidence had been at places where the material was used rather than where it was made. The skin was the main channel of absorption, as shown by the occupations of those affected. A method of exhaust ventilation could do little to reduce the danger from skin absorption. Mechanical aids to diminish the need for handling the material had been employed. Other safeguards used were alternation of employment, periodical medical examination, and cleaner working; and these, with suitable ventilation, were the chief methods of control.

VISCOUNT CHETWYND (managing director of a large factory) wrote saying that it was in the interest of a factory that sickness should be kept down, in view of the reduction of labour. That poisoning was due to fumes rather than to dust was, in his opinion, shown by the fact that in a group of men who worked covered with dust but with easy access to the air no cases arose; while in another group who worked where the circulation of air was poor and fumes were more evident the incidence was 9.3 per cent. With better ventilation this percentage dropped, a similar reduction being noticeable also after a gale. There were more gastric cases among women than among men, who fed themselves better. A part of the wages of the women was withheld, and they were efficiently fed; a reduction of cases from 11.6 to 1 or 2 per cent. followed. Although the amount of wages withheld did not cover half the expense of feeding, the improvement in health made the transaction financially successful.

Professor BENJAMIN MOORE said that the minor illnesses arising from T.N.T. were of very great importance. The number of absentees from this cause at one factory was high. Animals kept in dense fumes for considerable periods had remained well. He then noticed that in a very clean factory, where workers had oily hands, cases occurred. Next he provoked poisoning symptoms in himself by rubbing an oily preparation of T.N.T. into his palms. In a factory he had breathed fumes and dust very systematically, but had not induced any poisoning. Most poisoning occurred among the workers who rubbed off the spilt material about the shells, which should never have been there. There was an attitude of false security about the handling of T.N.T. because it was so little explosive. There should be as clean working with T.N.T. as with black powder or petrol. As preventive measures, cleanliness came first, then alternation of employment. During the periods of cessation of work with T.N.T. there must

be cleanliness of the skin, changing of underclothing, and cleansing of the scalp. An organic solvent, such as acetone, should be used to remove the material from the skin and scalp as far as possible. The greater the cleanliness the less would be the incidence of illness. There should be a penalty for careless handling and if the floor became littered with dust.

Post-mortem Appearances.

Dr. B. H. Spilsbury described the *post-mortem* and microscopical changes found in fatal cases of tetrachlorethane, dinitrobenzene, and trinitrotoluene poisoning. He pointed out that in all cases the most advanced changes were found in the liver. In large areas the liver cells had almost or entirely disappeared, the stroma of the organ remaining, and showing in some cases processes of organization, with fine globules of fat as sole evidence of the previous fatty degeneration of the cells. The bile ducts in some cases remained, and might show active proliferation and even slight attempts at regeneration of the liver tissue. The areas in which the liver tissue had not disappeared might show some hypertrophy of the liver cells, but these generally exhibited a varying degree of fatty degeneration. In all these cases the kidneys exhibited fatty degeneration, generally widespread and advanced. In most of the cases there was fatty degeneration of the heart muscle. Experiments in rats with the vapour of tetrachlorethane, conducted by Dr. Willcox and himself, had shown that, after exposure to the vapour for one week, a marked fatty degeneration of the liver developed, and some of the kidneys and heart, the other organs showing no pronounced changes. These experiments suggested that the earlier stages of tetrachlorethane poisoning in man consisted of fatty degeneration, which, in the liver, led to complete destruction of many of the liver cells before death.

Morbid Anatomy.

Dr. H. M. Turnbull had examined *post mortem* seven cases of toxic jaundice caused by T.N.T. In six of these the least damage in the liver was in the anterior part of the right lobe. In the seventh the portion most affected was the upper part of the right lobe. The destruction was greatest in the parts most remote from the portal blood supply. The condition resembled portal cirrhosis of the liver in the patches where the destruction was not complete. In some cases there was regeneration. The changes had not always been progressive. In one case a large liver was met with, showing only three very small areas of complete destruction, and elsewhere reticular fibrosis. Another case was one of very severe anaemia without jaundice, and was erroneously thought to be an example of pernicious anaemia. The liver showed fatty degeneration in the centres of the lobules, such as occurred in severe anaemia (there was no iron), but in another part the lesions were like those due to T.N.T. Two other cases of men with extremely severe anaemia were examined. They were examples of aplastic anaemia, and very little marrow was found, but in it were many plasma cells and phagocytes containing chiefly erythroblasts. There appeared to be an actual destruction of the marrow by the poison.

Captain Matthew J. Stewart, R.A.M.C.(T.), gave the results of observations dealing with: (1) The morphological changes in the blood occurring in a series of fourteen cases of toxic jaundice from trinitrotoluene poisoning, and (2) certain points in the morbid anatomy of the disease as observed in a series of seven fatal cases.

I. Changes in the Blood.

The cases numbered 14, and occurred in munition workers admitted to hospital during the months August to December, 1916. Most of them were under observation for weeks or months. As many of them were still coming up regularly for examination, these results were to be regarded as partial and preliminary, but sufficient had already been made out to show that very profound changes in the composition of the blood might occur as a result of trinitrotoluene poisoning; it might be said that such changes were the rule in cases in which pronounced clinical symptoms, and especially jaundice, manifested themselves. One case only out of the 14 examined, a man who, clinically, was never seriously ill, showed no blood changes. All the others had definite deviations from the normal of some sort or another.

A. *Changes in the Leucocytes.*

These were worked out on a basis of the absolute number per cubic millimetre of each variety of leucocyte; the fairly elastic figures taken as the limits of the normal were: Neutrophile polymorphs, 3,600 to 6,750; lymphocytes, 1,200 to 2,700; and eosinophiles, 30 to 360 per c.mm.

(*a*) *Neutrophile Leucopenia.*

This, the most striking of the leucocytic changes, was present at some stage of the disease in 9 out of the 14 cases. In 4, two of them fatal, the leucopenia was extreme, under 1,100 per c.mm.; of the other 5 affected, the highest neutrophile count was 3,175. In the two fatal cases the leucopenia was progressive and terminal, the final counts being 120 and 636 respectively. One case illustrated very well the polymorphonuclear recovery which accompanied clinical improvement in the condition of the patient. While the patient was seriously ill the neutrophiles numbered only 1,080 and 1,092. A fortnight after her discharge from hospital they numbered 6,280. In three cases, one of them fatal, neutrophile leucopenia was associated with anaemia of pernicious type. A progressive failure of the leucoblastic function of the bone marrow was therefore to be regarded as one of the most common manifestations of severe trinitrotoluene poisoning, but that it was not a constant feature in fatal cases was shown by one instance. In another fatal case, which was not investigated during life, the bone marrow showed evidence of great leucoblastic, as well as erythroblastic, activity. Here the whole duration of illness was only one month, yet the liver changes were extreme, and it seemed reasonable to suppose that there had not been time for the development of the full toxic action on the marrow. Whether this neutrophilic failure was due to a direct action of the poison on the leucoblastic tissue could not be said with certainty, inasmuch as all the cases in which it occurred presented clinical evidence of an antecedent or accompanying hepatic lesion (jaundice, etc.), while both the fatal cases showed a typical advanced trinitrotoluene cirrhosis of the liver *post mortem*.

(*b*) *Neutrophile Leucocytosis.*

This change was present in a notable degree in one (fatal) case only, in which, at the first examination, the total leucocyte count was 14,200, of which 10,000, or 70.5 per cent., were polymorphonuclears, while a month later, on the day before his death, the figures were 22,000 and 19,200 (87.25 per cent.) respectively. This change was unassociated with any variation in the lymphocytes or in the red cells or haemoglobin, but at the first count there was an eosinophilia of 1,000 per cubic millimetre. *Post-mortem* examination showed the bone marrow in the shaft of the femur to be largely fatty, with a narrow peripheral zone of red. Microscopically, small foci of very active leucoblastic proliferation were found. The inspection, however, failed to reveal any inflammatory cause for the persistent leucocytosis, which was in striking contrast to the other fatal and clinically serious cases. In three other cases an early and slight neutrophilia was present, but was speedily followed in each instance by a pronounced leucopenia.

(*c*) *Lymphocytosis.*

This was one of the most commonly observed changes; it occurred at some time or other in 9 out of 14 cases, and varied in different patients from 3,150 to 5,100 per cubic millimetre. Considerable variations were often seen from time to time in the same patient, but the fluctuations were irregular and did not appear to have much, if any, significance. In the remaining five cases the lymphocytes ranged within normal limits, except that in two cases there was a single temporary drop to 1,040 and 1,160, respectively. Even in fatal cases and in those showing profound polymorphonuclear or erythrocytic failure the lymphocytes were maintained at or above the normal level. In two cases lymphocytosis was the only change noted.

(*d*) *Eosinophilia.*

This was observed in three cases; in two of these it was well marked, accompanying a marked neutrophile leucocytosis in one and slight neutrophilia in the other. While

its significance was doubtful, it was to be noted that in no case did an excess of eosinophiles coexist with a neutrophile leucopenia. Altogether the number of eosinophiles was found to be a very variable quantity in these cases.

B. *Changes in the Erythrocytes and Haemoglobin.*

These were much less conspicuous than the leucocytic changes. A serious degree of anaemia was observed in three cases only; in all the others, including two of the fatal cases, the red cell counts were over 4,000,000, but a slight grade of chlorotic anaemia was present in several. In the three serious cases the anaemia was of the "pernicious" type, with a colour index over 1, but very varying degrees of severity were presented. In the most extreme case there was a fall in the red cells to well under 1,000,000, and as the haemoglobin was not reduced to anything like the same extent (25 to 30 per cent.) there was a high colour index (1.5 to 1.8). The erythrocytes in this case were greatly altered qualitatively; anisocytosis was well marked, with many megalocytes. During the worst phase numerous erythroblasts appeared, and there was polychromatophilia. In the other two cases the red cells fell to 1,500,000 and 2,900,000 respectively, with colour indices of 1.4 and 1.1. Qualitative changes in the red cells were not striking—some anisocytosis with many megalocytes, and in one case slight polychromatophilia. Punctate basophilia was not seen in any case, in striking contrast to the findings of Malden in workers among dinitrobenzene and anilin.

II. MORBID ANATOMY.

The liver lesion appeared to lie somewhere between subacute yellow atrophy and ordinary multilobular cirrhosis of irregular distribution. The action of the poison on the hepatic cells was probably slow and insidious, and the degenerative changes were speedily followed, if not actually accompanied, by leucocytic infiltration and fibroblastic overgrowth. The degenerative and other processes once set going were progressive, even when the patient was removed from the influence of the poison, and in a certain proportion of cases a fatal termination ensued in from four to twelve weeks after the first symptoms. Certain portions of liver tissue escaped complete destruction, and these showed evidence of more or less regenerative hyperplasia. It might be assumed that in some cases this persistent and regenerated hepatic tissue would be sufficient to maintain life for a considerably longer period than three months, but what the ultimate fate of such persons would be time alone could show.

In the series of seven *post-mortem* examinations on which his remarks were based, the weight of the liver varied from 20 to 32 oz., the average being 27 oz. The degenerative-cirrhotic process, as evidenced by the dark red contracted areas, was always most advanced in the left lobe and inferior marginal region of the right lobe. Often these two portions of the organ were composed almost entirely of red tissue. Another striking feature was the frequency with which large rounded yellow nodules projected from the under surface of the right lobe on each side of the gall-bladder, less often from the Spigelian and quadrate lobes. The bone marrow of the femur was examined in 6 cases. In five the red marrow was in excess, extending well down the shaft of the bone, but on microscopic examination a definitely erythroblastic reaction was found in one case only. In it the yellow marrow of the shaft was completely replaced by a cellular red marrow, the appearance being comparable to that seen in pernicious anaemia. Evidence of considerable leucoblastic activity was also present, but there had been no opportunity to examine the blood during life. In one case with neutrophile leucocytosis the shaft marrow was fatty, with a narrow red layer next the bone. Microscopically, some small foci of active leucoblastic proliferation were seen. The spleen was never appreciably enlarged, the weight varying from 4 oz. to 7 oz. in different cases. Ascites to the extent of five or six pints was present in three cases. Clinical examination of the fluid in one case showed a very scanty cellular deposit with a preponderance of lymphocytes. A very few red blood corpuscles and endothelial cells were also present. Haemorrhages in various situations were present in five cases, most frequently in the peritoneum and pericardium, less frequently in the stomach, lungs, pleurae, endocardium, and skin. In one case there was very extensive haemorrhage into the peritoneum and subperitoneal cellular tissue, especially of the omenta, mesocolon, mesentery, and appendices epiploicae. In the same case there was profuse terminal oozing into the stomach. In the other four cases the haemorrhages were mainly petechial.

Dr. P. N. PANTON said that he had examined the blood in fifty women in one factory who were still at work and apparently well. No blood changes were found except those of minor importance. The majority showed some leucocytosis, chiefly of polymorphonuclear cells. There was no suggestion of blood destruction, in contradistinction to what had been described in poisoning by D.N.B.; 100 workers had been examined for cyanosis; 18 were definitely cyanosed; others were blue, but possibly because the day was cold. The cyanosis had been generally ascribed to methaemoglobinaemia, but he did not consider that this had been proved. He had used Haldane's test, with which 36 examples of blood were positive, but it was difficult to be sure of the conclusiveness of the test. In 20 out of 100 cases the serum was bile-tinged, without evidence of jaundice, but this sign was also present in a certain number of normal people. Of 19 patients suffering from poisoning by T.N.T., 15 of whom had toxic jaundice, nothing abnormal was found in the blood in 13. Two conditions might occur, in his opinion, with T.N.T.: (1) Toxic jaundice; (2) aplastic anaemia. He had seen 4 cases of the latter—2 with jaundice and 2 without.

Dr. I. FELDMAN raised the question of the possibility of another toxin being present in T.N.T. cases. Webster's test should not be regarded too absolutely as determining the existence of T.N.T. poisoning. He cited a case which had occurred seven weeks after the last exposure to the poison, and in which no trace of T.N.T. was found in the urine or faeces. In two animals inuncted with T.N.T., no trace of T.N.T. was found in the organs, and in a fatal case also T.N.T. was absent from the organs. Among the early symptoms were a very definite dark-brown colour of the urine before jaundice was noticeable, urgency in micturition, and lassitude, the patients feeling faint and weak. A later symptom in one case was the appearance of leucin and tyrosin crystals in the urine. The metabolic activity of the liver was not affected as far as urea was concerned.

Clinical Aspects.

Dr. W. J. O'DONOVAN dealt with the clinical aspects. The typical manifestations could be classified into five groups: (1) Dermatitis; (2) an irritative gastritis evinced generally during the first week of employment and cured by simple treatment and a few days' holiday; (3) a toxic gastritis; (4) effects upon the blood and blood-forming organs; and (5) toxic jaundice. Toxic gastritis was due to T.N.T. absorption; its symptoms were colicky epigastric pain, often severe, and having no relation to meals; constipation, anorexia, wasting, and sometimes vomiting were associated symptoms. It was difficult to diagnose this from gastritis due to other known causes, but the wizened pallor of the face of these T.N.T. cases was very striking. Another common sign of T.N.T. absorption was cyanosis, but neither this nor gastritis were reliable warnings that jaundice might supervene. Of 30 cases of toxic jaundice, in 15 the jaundice was the first sign to call for notice. In 1916 about 50 deaths had occurred from toxic jaundice, a mortality among those exposed of 0.05 per cent. The total sickness incidence had in one factory been as high as 11 per cent., but the sickness incidence and the mortality-rate, in cases of jaundice, had both steadily lessened. Jaundice might supervene at a very early or late period of employment, from the fourth day to the ninth month, and it might first appear after an absence up to two months of freedom from exposure to absorption. The prognosis of a case of toxic jaundice was uncertain. When recovery was expected coma or convulsions might suddenly supervene, but with the early detection of icterus the prospect of the chances of recovery were much greater. A second attack should not occur, because a return to T.N.T. work on recovery from toxic jaundice was forbidden, but he had seen one such case; in this the man, after a return to T.N.T. work, became again icteric, and, in addition, very pale; the serum contained bile pigment, and the blood showed a marked absence of bone marrow reaction. Since

Professor Moore's investigations were reported great attention had been paid to the prevention of the possibilities of skin absorption.

Dr. J. A. P. BARNES said that an observation of 1,100 workers had borne out in the main the contention that the channel of absorption was chiefly the skin. He had found that among employees working with greasy hands the incidence of sickness had been 17 per cent., as compared with 10 per cent. among others. In two groups of workers the hands were brought into close contact with the powder. Among these there were toxic symptoms in 10 per cent.; in all the others they occurred in 1 per cent., in spite of exposure to fumes in the case of some of them. He thought that the mucous membrane was also a channel of absorption in the case of women who wore suction plates, between which and the mucous membrane a sandwich of powder collected and remained all night, as the women were often advised by the dentists not to remove these plates at night. Girls, after a few days at the work, often suffered from severe mental depression, replaced later, when serious jaundice occurred, by a state of exaltation, probably toxic, and reminiscent of the *spes phthisica*. He hazarded the suggestion that excretion plays a large part in the elimination of the toxicity of T.N.T. He had transferred a group of ten workers from a well-ventilated building to one less well ventilated and more confined. They deteriorated in health, while those who replaced them, coming from the worse-ventilated building, improved considerably. He had endeavoured to find out whether any after-effects occurred in those who had formerly worked in T.N.T.; constipation was commonly complained of.

Dr. W. R. SMITH gave his experiences in a shell-filling factory. Up to January 20th there had been 62 cases of toxic jaundice with 16 deaths, 10 in men and 6 in women. Six cases had occurred in youths under 18, with 4 deaths; the employment of juveniles was then stopped. There had been a steady fall in the number of cases, due to several factors, the most important being efficient ventilation. Another beneficial factor was the introduction of intervals during the shifts for relaxation, feeding, and walking about. All the women were supplied with two good meat meals daily. Thorough preliminary examination of employees had been introduced, and free dental advice and treatment provided on the spot. Finally, pressure had been applied to make the patients report earlier. A most striking clinical feature was the reluctance of most cases of toxic jaundice to admit that they were ill in the early stages. No dermatitis had been met with among the jaundice cases. Nausea and anorexia were usually present early. Constipation was almost invariable. Purpura occurred in three cases, in one around the nail beds, in one in the mucous membrane of the mouth and lips. Drowsiness and sometimes maniacal violence occurred. In one case tetanic convulsions and opisthotonos simulating cerebro-spinal fever were met with. Absolute rest in bed was essential even in the mildest cases. Calcium chloride might be used if there was any suggestion of haemorrhage.

Major O'REILLY said it was noteworthy that no ill effects from T.N.T. had been noted before the war, even among juvenile workers. The cutaneous affection was most frequently met with during the first week of exposure, the hands, wrists, face, and neck, and occasionally the ankles, being the chief sites. Itching occurred. It was followed by a fine desquamation, and was not generally severe but yielded to simple ointments. The toxic effects presented themselves in three forms: The gastric type, usually with cyanosis, toxic jaundice, and the anaemic type. These were not different stages but distinct types. The gastric type occurred at all periods of exposure, and was marked by listlessness, pallor, cyanosis, an icteric tinge of the conjunctivae, depression, nausea, giddiness, faintness, pain behind the xiphisternum and constipation. It was remediable by suitable treatment, and left no after-effects. The chief diagnostic aids were constipation, the pallid pinched appearance, and the epigastric pain. He had not seen the toxic jaundice form emerge from the gastric form. It appeared suddenly, and did not differ at first from ordinary catarrhal jaundice. The liver might be enlarged in the early stages. In three fatal cases meningeal symptoms appeared, ending in coma and death. The anaemic cases looked like examples of pernicious anaemia, but though the colour index might be high there were no nucleated red cells. The use of acetone had been encouraging. From the point of view of prevention great attention had been paid to the teeth, which were inspected once a week. Gloves, veils, and respirators were supplied, and change of employment given fortnightly. The workers were warned to change their clothes when at home. Milk was supplied free, washing of hands was insisted upon, and ointment was supplied in each work house.

Dr. MORLEY FLETCHER recorded a case of toxic jaundice under his care in hospital, in which saline infusions and venesection had had no beneficial effect, in contradistinction to what he had observed in cases of acute yellow atrophy. The blood was noticed to be very tarry. He questioned whether these methods had been useful in other cases and whether they should be employed in early stages. The cerebro-spinal fluid had been found bile-stained after death in a case in which it was clear during life.

Fleet Surgeon R. C. MUNDAY recorded his experience in the Admiralty munition establishments. There had been a complete immunity from toxic jaundice. This he explained by the greater amount of cubic space provided, the absence of piecework, better discipline and cleanliness, and better ablutionary arrangements. It was better to remove the fumes from their source than from the bottom of the room. Alternation of work was provided very fully, scrupulous cleanliness was observed, and soiling of shell cases was prevented. There was an absence of dust on the floors. The workpeople were clean. He agreed that the skin was the chief channel of absorption. At the naval air stations no case of dope poisoning had occurred, the alternation of work among those employed being very perfect.

Dr. C. PILLMAN said that it was difficult to state when toxic jaundice started, as 15 per cent. of women workers had yellowness of the conjunctivae, probably due to constipation, before commencing work. All cases of jaundice could not, therefore, be notified with advantage.

Dr. MARY A. S. DEACON and Dr. H. G. P. CASTELLAIN concurred as to the frequency of bile-tinged conjunctivae before exposure to T.N.T.

Reviews.

THE MAKING OF THE PROSTITUTE.

A BOOK has recently appeared, entitled *Downward Paths*,[1] which gives an account of an investigation into the causes which contribute to the making of the prostitute. A preface is written thereto by Miss A. MAUDE ROYDEN, who states that "the book is published under a trust, and the several writers who have contributed to produce it desire that their names should remain unknown. They are women who, realizing that knowledge is the first need of the reformer, have sought at least to make a beginning, and to study the conditions of a great and terrible problem which society must ultimately attempt to solve." An anonymous investigation of this sort suffers under a disadvantage: the statements made are not subject to verification by the ordinary citizen, he is obliged to take the evidence offered by those who have made direct investigations, and the credibility of the evidence must be the credibility of the witnesses. In this instance the writers provide no personal guarantee of credibility, for they are not known.

The data forming the basis of the book are slender; the chief evidence is that provided by the histories of 669 women, and that evidence is wholly secondhand. Such a foundation is insufficient for a generalization such as is hinted at in the foreword. But when the particular findings are compared with those derived from other and much more extensive investigations, it is found that there is a substantial agreement; so that this book may be taken to

[1] *Downward Paths: An Inquiry into the Causes which Contribute to the Making of the Prostitute.* With a foreword by A. Maude Royden. London: G. Bell and Sons. 1916. (Cr. 8vo, pp. 213. 2s. 6d. net.)

give a fair picture of the facts, and it has a certain special value in that it is written from a feminist standpoint.

Most people, when questioned on the causes of the making of the prostitute, will answer, without hesitation, that poverty and the wickedness of the seducer are the chief factors. The girl sells her soul for a morsel of bread, or she is robbed of her innocence by the ruthlessness of a beast. These ideas rest on a general impression gained by reading works of romance, especially the sort that is brimful of the kindlier human sympathies, and tells of the saving of the lost and the repentance of the evil-doer.

The book before us is a corrective of such ideas. Indeed, it will be a shock to most to discover that poverty and the seducer are the least active agents in the making of prostitutes, and that the causes of prostitution are more subtle and much more difficult of eradication.

Chief amongst the causes of prostitution is placed "bad homes and the desecration of childhood." In this category are lumped two conditions—the real bad home, where the parents and the whole surroundings are vicious; and another sort of home, where propinquity and a generally "unmoral" atmosphere leads to a familiarity amongst children and a precocity in sexual indulgence. It is evident that modesty is cultivated by a reasonable spaciousness of abode, and that the reverse may be true. "There is a habit of submission to the physical demands of the opposite sex evolved from the upbringing in squalid homes. Mere animal toleration is fostered." The authors incline to the view that early and abnormal stimulation leads to perversions and disturbances of the sexual feelings; the victims of such conditions emerge from childhood in too many cases endowed with an appetite which "tempts them into dangers, and deprived already of those precious safeguards for the young of both sexes—modesty, virginity, and a sense of self-respect." This section of the work is perhaps the least substantiated, and its impressions may be corrected by the statement of another author, to whose work we refer later.

The next great cause cited (and it is probably the chief cause of prostitution) is "deliberate choice." Many adopted the career from vanity, love of pleasure, an adventurous spirit, bad companions, a wilful and uncontrollable nature, laziness, love of sweets and the obligation to pay bridge debts, sexual desire, love of gain; these cases added together form a full 40 per cent. of the tale of the prostitutes brought into the inquiry. Such a finding as this makes the task of eradication vastly difficult. From the cases cited it is evident that neither ignorance nor knowledge, innocence nor wisdom, poverty nor comfort, determine the actions of some women. There is a perverse generosity at one end of the scale and a greedy cunning at the other, but both combine in a similar line of action, and by an unmoral impulse which is suggestive of a low grade of development rather than the breach of a known code of morals.

"Homelessness" is given as a cause for a small number of women. A few drifted into prostitution from sheer loneliness; more had already entered on a course of conduct which estranged them from their homes before they took up this sort of life. "Seduction and desertion" is stated to be "comparatively rare as a first step to an act of prostitution, that is, to be undertaken for gain, nor does it, except in a small proportion of instances, lead to prostitution." The writers expressly exclude as innocuous premarital sexual freedom, the custom of some parts of this and other countries—such as the "island custom" of Portland, where for a long period of years there were no illegitimate children and few childless marriages. The popular idea credits "compulsion and exploitation" as causes responsible for much degradation of womanhood, but the book gives no support to this idea. "A weeping and reluctant girl is not an easily marketable asset, and it may be doubted whether the majority of men who visit houses of ill fame are prepared to commit rape." Recently the papers and the mouths of gossips were full of harrowing tales of "white slavery," spread at the time of the promotion of the Criminal Law Amendment Act of 1912. A careful investigation was made by Mrs. Billington Greig into a crop of "cases," and none could be substantiated. One authority stated, "I cannot call to mind a single case of the forcible trapping of a girl or a woman by drugs, false messages, or physical force, during the last ten years, that has been authenticated or proved. I should say that such cases were very rare indeed. . . . The average number of cases of procuration in London is about three per annum, and none of these are really cases of trapping."

The married and the widowed, it is stated, do not contribute largely to the ranks of the prostitute. "Some witnesses assured us that such cases are almost unknown." But nurses in seaport towns said that wives of seamen often resorted to prostitution as temporary help when their husbands were away.

Lastly come the feeble-minded. These formed two groups: those morally deficient, but sexually active or even attractive, who pursue more than they are pursued; and the larger class of non-resistant ones, who have no active impulse to seek out men, but who will yield to any one who approaches them. According to the figures of this return somewhat more than one-third of all the cases reported on showed some sign of mental defect.

We have at hand a little book of 60 pages, published in 1890 by the Rev. G. P. Merrick, M.A., M.B., Chaplain of H.M. Prison at Millbank, entitled *Work Amongst the Fallen* (Ward, Lock and Co., London). This bachelor of medicine and chaplain made personal records of the lives of over 100,000 women. In his book he gave a return based on 16,000 consecutive cases. There is scarcely an item of interest—from place of origin, age at fall, work of parent or of subject, and general education, up to religious knowledge—on which he has not some information to give. Half the London prostitutes came from the provinces and mainly from shipping and military centres. The crowded East End of London was not a cradle of infamy. "Though it gives homes to many hundreds of thousands of human beings, and comprises miles of streets and roads whose invariable features are poverty and destitution, misery and squalor—a very desert of the good things of this life—yet it has a smaller criminal and dissolute population (not in comparison, but in fact) than any other large area in London." Half of the cases had been domestic servants; needlewomen, trade girls, and barmaids came next in order; theatre and music-hall girls were low on the list, and lowest of all were not the "no occupations" but the "street sellers"; he concluded that open-air life was in some sense conducive to morality. More than half the girls stated that they had had no or little parental care. More than half had fallen before they were 21 years of age, the maximum age of incidence was 17 years.

As to causes, he owned that he had thought "every poor outcast a victim of some man's brutality, but discovered that woman's special enemy was not so frequently a man but a member of her own sex, and often the very woman herself." Of 16,022 women, 4,790 stated they owed their fall to a man, and nearly always one of their own class; 11,232 were led away by such allurements as "nothing to do," "plenty of money," "your own mis ress," "perfect liberty," "being a lady"—all these being their views of a "life of pleasure." A very few began the life to gain support for their families; for their own children, their parents, younger brothers and sisters; or for paramours and husbands. Mr. Merrick stated that "it is not uncommon for a man to marry a poor woman of this class, in order that, when he loses his work, or gets tired of it, she may keep him by the sale of herself." No fewer than 773 women considered that "a life of gross immorality was not inconsistent with the regular practice of attending a church or chapel." Their ideas on this point were often curious. "One woman told me that she was 'certainly on the streets, but she had not sunk so low as not to say her prayers night and morning"; and he adds, "I am convinced that there are many poor men and women who do not in the least understand what is implied in the term 'immorality.' . . . To talk of virtue or purity is simply to talk over their heads." The rate of mortality was "terribly high"; his investigations gave an average life after having taken to the streets of about 3 years and 6 weeks. The main causes of death were due to exposure, irregular feeding, and drink.

He makes a caustic comment on the state of our town streets. It is unfair to poor girls, unfair to men, unfair to pure-minded women. "Unfair to poor girls that vice in a glamour of dress, apparent prosperity, ease, and freedom, should be everywhere flaunted before their eyes." In discussing the prevention of the evil, he writes: "It is surprising to find that when women have 'fallen' they

seldom warn others against following their example; on the contrary, they try to drag others down, and keep them down."

It will be seen that the findings of this larger inquiry by Dr. Merrick are in substantial agreement with the findings of the smaller inquiry made by the women writers. Both suggest that the actual causes that lead to a life of prostitution are in themselves essentially trivial, but that there is some underlying deficiency in the mental, moral, or physical equipment of some women that leads them to view such a life not merely without repugnance but actually with favour. It is probably this that accounts for the last sentence quoted from Dr. Merrick's book; the women probably did not mislead their sisters of malice aforethought, rather they thought that in so doing they were doing them a good turn—"putting them on to a good thing"!

Such a conclusion shows the difficulties in the way of treating such a disease of the body politic. The writers of *Downward Paths* do not agree in this conclusion, but the data on which they base their deduction scarcely justify their view of the cure—"a reconsideration of the whole economic position of women."

FAMILY MEDICINE AND HYGIENE FOR INDIA.

THIRTEEN years have elapsed since the seventh edition of *Moore's Manual of Family Medicine and Hygiene for India*,[2] edited by Major I. H. TULL WALSH, I.M.S., was published. The work was originally composed in the year 1872 by the late Surgeon-General Sir WILLIAM MOORE of the Indian Medical Service, and was selected by a special committee as the best of several treatises submitted in competition for a prize offered by the Government of India. The publication of so many editions attests the popularity of the work and the need of its revision, in order to keep pace with the progress of medical science. In a brief foreword Director-General Sir CHARLES PARDEY LUKIS, M.D., F.R.C.S., K.C.S.I., remarks that "thirteen years is a long period in these days of active advance in all that pertains to tropical medicine, and the need of a new edition has been evident for some years past." The preparation of this eighth edition has been ably accomplished by Major SPRAWSON, assisted by no fewer than twelve collaborators. The revision has been most thorough. The arrangement of the material has been changed, and separate chapters have been assigned to Indian medicine, the anatomy and physiology of the human body, the diagnosis of disease, fevers, diarrhoeas, other medical diseases, poisoning, accidents and surgical emergencies, surgical diseases, diseases of the skin, affections of the eye and eyelids, diseases of the ear, nose and throat, diseases of women, pregnancy and labour, management of the infant at birth, the hand feeding of infants, diseases of children, the preservation of health, nursing, therapeutical applications, etc., invalid diet, disinfection, and prescriptions. The arrangement of subjects in the several sections is alphabetical, and a copious index renders access to the contents of the book easy. The work was originally intended for the use of persons residing beyond the reach of skilled medical aid and advice. Major Sprawson remarks that doctors and medicine shops have been greatly multiplied throughout India since Moore's book was first published, and that railways and motors have rendered the obtaining of skilled assistance less difficult; still, many Indian residents living in remote places will be glad to possess information, conveyed in plain terms, regarding the recognition and treatment of diseases and injuries. The descriptions and recommendations offered in this book go considerably beyond the lessons in first aid and home nursing which are so common and popular, and, it may be added, useful in these days; and it may be questioned whether, in many cases, they are intelligible and practicable for laymen. The information and directions are sound and sensible, and even if mothers and nurses cannot, for example, perform the prophylactic and curative inoculations mentioned in the book, it is as well that they should know that such methods are practised with advantage. The editor very properly inserts a caution that "it should be clearly understood that the treatment of illness recommended in this book, whether by medicine or otherwise, is not intended to take the place of skilled medical assistance and advice" when available.

[2] *Moore's Manual of Family Medicine and Hygiene for India.* Published under the authority of the Government of India. Rewritten by C. A. Sprawson, M.D., B.S.Lond., M.R.C.P.Lond., Major I.M.S. With a Foreword by Sir C. Pardey Lukis, M.D.Lond., F.R.C.S.Eng., K.C.S.I., D.G., I.M.S. Eighth edition. London: J. and A. Churchill. 1916. (Demy 8vo, pp. 672; 69 figures. 6s. net.)

NOTES ON BOOKS.

THE fourth volume of the second edition of the *Encyclopaedia Medica*,[3] edited by Dr. J. W. BALLANTYNE of Edinburgh, contains articles from *Ear* to *Filariasis*, written for the most part by Scottish physicians, surgeons, and specialists. It is impossible to do justice to the merits of a volume of this important work within the limits of a brief review. The *Encyclopaedia Medica* is designed to supply the needs of medical practitioners who want scientific and practical accounts of the various conditions of disease with which they have to deal in the course of their professional activity. In addition it contains most useful definitions of the chief scientific and medical terms employed in medical literature, accounts of drugs and methods of treatment, general articles on medical and physiological processes of importance, and brief essays on kindred subjects. The volume now before us contains numerous excellent articles, well written by competent authorities, up to date, and thoroughly practical so far as treatment is concerned.

Evolution,[4] by J. A. S. WATSON, B.Sc., is the first publication in a series to be known as "Through the Eye" Series, designed, presumably, to educate through the eye as distinct from "through the ear" as in oral teaching, or "through the imagination" as in reading. In a less precise age than this we might wonder at a series of "books" bearing such a title, for if "through the eye" means anything, it means oral teaching on objects which are at the same time demonstrated to the eye. As a matter of fact, the work under notice is merely an essay on zoological evolution with illustrations. These last, which number 146 in a text of 153 pages, form the chief feature of the book, and, as usually happens in such cases, the text has no little difficulty in keeping pace with the illustrations, and tends to lose that quality of sequence which it is so necessary for the writer to preserve if he wishes to retain the interest of the reader. The illustrations have been largely selected from Günther's and Haeckel's works, and are excellently reproduced on thick paper. The chief criticism which can be directed against them is that no scale is furnished to enable the reader to appreciate the size of the animal depicted. From Figs. 114 and 115, for example, the reader might obtain the impression that there is little to choose in size between the armadillo and the sea-cow, and from Figs. 95 and 96 that the sphenodon is somewhat larger than the alligator. The author would have succeeded better if he had chosen fewer types to illustrate his thesis and had dealt with his types in greater detail. The book will, we imagine, be of more use to the teacher than to the general reader, for it has brought together for the former a large number of useful and excellent illustrations.

Mr. KYRIAKIDES has long been known to students and readers of modern Greek as the author of various Greek-English and English-Greek dictionaries, and a Greek reader. He has now produced a pocket English-Greek dictionary[5] of a new type. The common English words are given, and under each are arranged the idiomatic phrases (so deplorably common, from the point of view of the foreigner, in the English tongue) and expressions in which the word is used. Each phrase and expression is rendered into modern Greek by the author; and so the reader has a dictionary that will stand him in good stead in translating from English into Greek, or, still more, in sustaining a conversation in Greek. The book is admirably conceived, and so far as we can judge, Mr. Kyriakides has succeeded well in the difficult task he has set himself. The dictionary should be in the hands of all travellers in Greece and the Aegean.

[3] *Encyclopaedia Medica.* Under the General Editorship of J. W. Ballantyne, M.D., C.M., F.R.C.P.E. Second edition. Volume IV. *Ear* to *Filariasis.* Edinburgh and London: W. Green and Sons, Ltd. 1916. (Roy. 8vo, pp. 693. Illustrated. 20s. net.)

[4] *Evolution.* By J. A. S. Watson, B.Sc. London: T. C. and E. C. Jack. 1915. (Cr. 4to, pp. 160; 146 figures. 5s. net.)

[5] *English-Greek Dictionary of Idioms, Proverbs, and Phrases.* By A. Kyriakides, advocate. Nicosia (Cyprus): The Nicosia Printing Office. 1916. (6 × 4½, pp. 908. 15s. net.)

MEDICAL AND SURGICAL APPLIANCES.

Intravenous Injections of Galyl, etc.

MR. JOHN ADAMS, F.R.C.S.Eng., writes: Messrs. Maw Son and Sons have made at my suggestion an outfit for the injection of concentrated solutions of the galyl and similar preparations. It consists of:

1. A syringe of Record pattern graduated up to 15 c.cm.
2. A mixing glass graduated up to 20 c.cm.
3. A glass rod for mixing purposes.
4. A glass tube, with a constriction to hold a small plug of absorbent wool, to serve as a filter.
5. A short rubber tube with metal ends to connect with the syringe and needle.
6. Two hollow needles with stylets.
7. A small scalpel.
8. Dissecting forceps and probe.

The apparatus must be sterilized before use, the plunger being removed from the syringe before boiling. The powder is dissolved in 10 c.cm. of fresh doubly distilled water; if this is not obtainable, tap water may be used, but this must have been boiled for a quarter of an hour, and allowed to cool to room temperature in a sterilized flask, this being done twice, so as to precipitate the lime salts and sterilize the water.

The bend of the elbow is first painted with tincture of iodine. A double thickness of lint, about four inches wide, is then placed round the arm just below the elbow to take up the small quantity of blood that will flow through the tube before the syringe is connected. The solution is then drawn up into the syringe through the filter, any air being expelled by inverting the syringe in the usual way. The selected vein is then brought into prominence by a rubber tube compressing the arm above the elbow, and a very small incision is made through the outer layers of the skin over the vein. The needle is connected with the rubber attachment and inserted into the vein, and when the blood begins to flow the pressure on the vein is released and the syringe is joined on, and the fluid slowly injected. To make absolutely sure the needle is in the vein the piston may be drawn back a very little, when a small stream of blood will be seen in the syringe. Should the needle not have entered no harm is done; another attempt can easily be made either in the same or a different vein. Failure to enter the vein, or piercing through both walls and injecting the solution into the surrounding tissues will cause considerable pain, and set up thrombosis and cellulitis.

The operation can be done in the consulting room and the patient sent home for the remainder of the day with safety. After use the apparatus must be carefully cleansed, using first warm water and then alcohol, the liquids being drawn up into the syringe and expelled through the rubber attachment and needle. I have given a large number of intravenous injections in the manner described with excellent results.

THE MEDICAL SERVICES IN INDIA.

REPORT OF THE ROYAL COMMISSION ON PUBLIC SERVICES IN INDIA.

THE report of the Royal Commission on the Public Services in India has been issued. It is a very large document, containing 528 foolscap pages. It consists of the report proper, filling 60 pages, and a series of twenty-four annexures, which are really parts of the report, since they contain detailed discussions on the several subjects, together with the recommendations; there are also a series of separate minutes by various members. The annexure dealing with the medical services occupies 40 pages, and the evidence upon which it is founded is given in the twelfth volume of the publications of the Commission, the report now issued being the first. The Commission, it will be remembered, contained no medical member, although it took much medical evidence. This evidence was taken before the war, and the Commission recognizes that certain parts of the information it obtained and the recommendations it makes thereon will call for review in the light of the experience afforded by the war.

The Commission included in the scope of its inquiry into the medical service in India all those appointments now filled as a matter of practice by officers who possess a medical qualification—for example, professorships and chemical examinerships and their connected posts, and the posts in the alienist, bacteriological, sanitary, and gaol departments. The more important of these posts are now filled, the report states, almost exclusively by the officers who form the War Reserve either of the Indian Medical Service or of the Indian Subordinate Medical Department, both military services with organization based on military considerations. Officers are recruited to them by the military authorities for service with the troops in the East, and after they have learnt their military duties those of them who are in excess of the peace requirements of the army are lent to the civil authorities for employment on civil duties until such time as they are needed on the outbreak of war. Transfer to civil employment is sought after by most of the officers, and forms one of the principal attractions of the two services. The civil element in the various medical cadres is restricted, for the most part, to posts of minor importance. Certain changes of detail have been made since the Commission completed its inquiry in India, and it states that at the time of its report, out of a total of 566 officers in superior civil medical employment, 493, or 87 per cent., were military, and 73, or 13 per cent., civil officers. In the case of posts of minor importance the position was reversed, for out of 821 appointments, 723, or 88 per cent., were filled by civil officers, known as civil assistant surgeons. Military officers of the Indian Subordinate Medical Department, who are also called Military Assistant Surgeons, occupied 98, or 12 per cent.

The Commission is satisfied that under existing arrangements the civil medical work of the country has been economically and satisfactorily performed, and that no case has been made out either on the ground of expense or of efficiency for ceasing to employ the Medical War Reserve of the army in India on civil duty. It considers, however, that should it be found in the future that the medical cadre of the army in India, as determined by military requirements, is insufficient to meet the civil medical needs of the administration, the Government should obtain such additional assistance as may be necessary by some form of civil recruitment to its civil medical service, and suggestions for carrying this out are made.

The Commission, recognizing that a new situation has been created by the war, recommends that a fresh investigation should be undertaken at its conclusion. In the recommendations it makes it assumes that the existing system will be maintained in its essentials. In these recommendations it lays stress on the necessity for calculating separately on their merits the needs of the army and of the civil medical administration, and for abandoning the idea that the civil medical administration should be dependent on the requirements of a military reserve. A purely civil machinery should be created to meet all civil requirements, but officers forming the Medical Reserve of the army should be admitted to the civil cadres so formed.

The Commission further recommends that if the experience of the present war leads to such an increase in the military reserves as would seriously endanger the maintenance of a civil element in the civil medical administration it should be considered whether a minimum number of civil officers in civil medical service should not be fixed. It considers that the civil departments should no longer be the adjuncts of the military services, and that even under the gravest war conditions the civil cadres should not be unduly depleted, and in particular that no dislocation of the educational and scientific work of the country should take place. It recommends that each of the various departments should be regarded as a separate unit, and deals with the matter under the following heads:

Part I. Civil medical services, including the administrative and staff posts, the civil and presidency surgeoncies, and the assistant surgeoncies and certain miscellaneous appointments of a kindred character.

Part II. Other services or departments—namely, professorships and chemical examinerships, with their connected posts, and the alienist department and bacteriological department.

The sanitary department, including the plague appointments.

The gaol department.

CIVIL MEDICAL SERVICES.

Under this head the Commission recommends:

That regular civil medical services should be constituted, one entrusted with the higher duties for the whole of India to be called the Indian Civil Medical Service, the others, formed separately in each province to carry out the duties of minor importance, to be called the Madras (Bombay, etc.) Civil Medical Services.

In the Indian Civil Medical Service should be placed the civil surgeoncies and posts of a similar or superior position, all officers holding them to be on one list and enjoying the same status.

In the local services should be included the assistant surgeoncies and similar posts not belonging to the various special departments.

Officers of the Indian Medical Service in civil employ should be recalled to military duty only if not of administrative rank, and only in the event of war.

No officers of the Indian Medical Service of more than five years' standing should ordinarily be admitted to the Indian Civil Medical Service.

Local governments should have full power to revert officers of the Indian Medical Service to military duty at any time during their probationary period. The period during which officers of the Indian Medical Service are awaiting transfer to civil duties should be utilized for specialized training.

Military assistant surgeons in civil employ should be admitted to the local services, and should be liable to recall to military duty.

Should the number of superior posts available for civilian officers be increased, direct civil recruitment should be adopted for at least a part of the Civil Medical Service, but regard should be had to the special needs of European officers entitled to free medical attendance, and of their families.

The Director-Generalship of the Indian Medical Service should be thrown open to all officers of that service wherever employed; the surgeons-general and inspectors-general of civil hospitals should have regular and direct access to the head of their province, or to the member of the council in charge of the medical department, where there is a council form of government.

Professors and Chemical Examiners.

The teaching staff of each Government medical college should be treated as a separate unit, and separate chemical and alienist departments established. Military officers holding superior posts in these departments should not be liable to recall to military duty in case of war, but military assistant surgeons holding minor posts should be liable to recall.

The clinical chairs of medicine, surgery, clinical surgery, ophthalmology, and midwifery, and their connected posts, should be reserved, so long as a fit person is available, for officers of the Civil Medical Service, however recruited.

The scientific chairs of physiology, pathology, anatomy, materia medica (or pharmacology), and biology, and their connected posts, should be thrown open to all candidates, and efforts should be made to have teaching in biology, chemistry, and physics given through the various universities.

Appointments to chemical examinerships and their connected posts and the alienist appointments should be thrown open to all candidates.

Appointments to professorships, chemical examinerships, and superior posts in the alienist department should be made with the advice of a committee, and only if no fit candidate be available in India should an officer be appointed from England.

Medical officers holding scientific posts should be debarred from private practice, but should receive a monthly allowance instead.

Medical officers holding clinical posts should be allowed consulting practice in their own subject.

Chemical examiners and alienists and their assistants should be allowed private practice in their own subject. It should, however, be open to the Government of India, or to any local government, where no qualified chemist or alienist is available, to call upon officers serving in these departments to give to the public their services in their own special line, the fees to be credited to Government, and a suitable monthly allowance made to the officer concerned.

Bacteriological Department.

All posts in this department, whether major or minor, should be included in a separate department, and members of the Indian Medical Service employed in it should not ordinarily be liable to recall to military duty. All appointments should be thrown open to general competition, and be made by the Government of India with the help of a selection committee.

If confirmed after two years' probation in the department officers should ordinarily remain in it for the rest of their careers.

Medical officers in the department should be debarred from private practice, but, if so required by Government, should give their services in their own special line to the public, all fees being credited to Government, and the officers receiving a suitable monthly allowance.

Sanitary Department.

The present provincial organization should be maintained, but local governments should appoint to the office of sanitary commissioner only if they have a suitable officer of the rank of lieutenant-colonel, or of equivalent standing if a civilian, available. The plague appointment should be brought on to the permanent strength of this department. Only such officers of the Indian Medical Service as have not yet attained administrative rank should be liable to recall to military duty.

In selecting candidates not belonging to the Indian Medical Service, local governments should act with the advice of committees formed separately for each province, consisting of three officials and two non-officials, and including two Indians.

For two years officers should be on probation, and such as are not members of the Indian Medical Service should during that time be given practical experience of urban and rural problems under the supervision of selected municipal and district health officers.

Gaol Department.

The Commission recommends that all questions relating to the gaol service should be referred to the expert committee which is to inquire into gaol administration. Meanwhile, such Indian Medical Service officers as are not of administrative rank should be liable to recall to military duty.

These are the recommendations which on first perusal appear to be the most important, but, on further examination, no doubt other points worthy of note will be found.

Promotion of the Growth of an Unofficial Profession.

The paragraph on this subject is as follows:

Several of the non-official witnesses who came before us drew our attention to the importance of developing in India an unofficial medical profession. Some of them were of opinion that this could best be secured by replacing the Indian Medical Service officers in the civil medical services by officers recruited in India. There can be no doubt of the need for an increased number of private practitioners to provide medical treatment on Western lines for the many millions of the people of India, and we have every sympathy with the movement which we observed in this direction. But to substitute one set of officials to do certain Government work of a restricted character for another would not help matters. We are, therefore, of opinion that this question should be treated as distinct from the question of limiting or reducing the number of Indian Medical Service officers in civil employ. To encourage independent practitioners we would let them have the advantages of State institutions and of State help wherever this can be secured without dislocation of the ordinary machinery. For example, Government hospitals should be made available as training grounds for young men who are about to take up private practice, and who are prepared to work in them as assistants to the house surgeons and physicians for suitable periods at the outset of their careers; and such men should be encouraged to come back in after years, to the extent of the clinical material available, and subject to the general rules of discipline of the hospital, to keep themselves up to date. We anticipate that in this way it would be possible to attach to the larger hospitals by ties of sentiment bodies of practitioners, who would look to them as their centres and to the civil surgeons in charge of them as their friends and professional heads. Arrangements should also be made by which practitioners of distinction should be allowed to join the visiting staffs of the non-teaching hospitals in an honorary capacity. Measures should also be taken to prevent Government medical institutions from competing with private practitioners by giving gratuitous relief to persons who can afford to pay for attendance. Suggestions were also made to us for assisting private practitioners by subsidizing from Government revenues private medical colleges and hospitals under suitable conditions to ensure efficiency and for enforcing registration. It was also claimed that money grants should be made or increased to institutions and societies for the training and treatment of women. These proposals are not directly relevant to our inquiry, but they appear to us to have been well conceived and to be worthy of favourable consideration.

British Medical Journal.

SATURDAY, FEBRUARY 3RD, 1917.

INDIAN MEDICAL SERVICES.

I.

THE Royal Commission on Public Services in India is unfortunate in the date of the appearance of its report, for not only is the mind of the country absorbed in the successful prosecution of the war, but the war has itself thrown new light on some of the problems the Commission had to consider, and it seems certain that further inquiry will be necessary. The Commission was appointed in September, 1912, to report in connexion with the Indian Civil Service and other civil services, imperial and provincial, on the methods of recruitment and the systems of training and probation; the conditions of service, salary, leave, and pension; and on such limitations as still exist in the employment of non-Europeans, and the working of the existing system of division of services into imperial and provincial. The report is signed by all the members, but each, with the exception of the chairman, appends minutes on certain points. The section dealing with the medical services occupies forty pages, and the evidence on this part of the subject fills a volume of 430 pages.

On the general preliminary point as to whether there is an obligation on the Indian Government to maintain state medical services the Commissioners are quite clear. "We have no hesitation," they say, "in finding that some form of state service is needed"; they are satisfied that in the present conditions of India, if there were no state service there would be large tracts of country left without any regular provision of medical relief, and "convinced that state control is necessary in order to secure the continued and extended diffusion in India of Western medical knowledge."

There are two grades of medical services in India—the higher grade, and the lower or assistant grade. The higher grade consists of the Indian Medical Service and certain officers promoted out of the assistant or lower grade. The Indian Medical Service and part of the assistant service are, in respect of duties, divisible into military and civil. The Indian Medical Service and the assistant Medical Service are primarily military services and form the war reserve of the Indian Army, both grades of officers being liable to recall to military duty in war. In the present great emergency a large proportion have been recalled to military duty; down to April, 1915, 286 officers of the Indian Medical Service, and 113 of the assistant Medical Service had been so recalled, and it may be assumed that the numbers are now greater. At the time when the Commission was in India the Indian Medical Service had an actual strength of 772 officers, of whom 475, or 62 per cent., were engaged on civil duties, all holding superior posts; and the assistant Medical Service had a strength of 713 officers, of whom 289, or 41 per cent., were employed by the civil authorities. It is very necessary always to bear in mind the point that the officers of the two grades employed in civil work form the war reserve of the Indian Army. The Commissioners state that they are satisfied that "under the existing arrangements the civil medical work of the country has hitherto been economically and satisfactorily performed, and that no case has been made out, either on the ground of expense or of efficiency, for ceasing to employ the medical war reserve of the army in India on civil duty."

The most important suggestion of the Commissioners seems to be that, should the number of superior posts available for civilian officers be increased, a system of direct civil recruitment should be adopted for at least a part of the civil medical service. The Commissioners do not put forward a detailed scheme for such recruitment, but express the opinion that when the time comes to frame one "regard should be had to the special needs of European officers entitled to free medical attendance and of their families." This is a very important point, for there can be no blinking the fact that medical education at present to be obtained in India is deficient in respect of the diseases of women and children. Efforts, the Commissioners state, should be made to utilize the products of the Indian medical schools, but it should be provided that no officer should be appointed unless and until he has proved his fitness in actual hospital practice. If it is found necessary to give Indians this training in the United Kingdom, sufficient facilities should be provided there for them. It is, they add, an unsatisfactory feature of the present arrangement that there are still districts in India in the charge of officers who would not be allowed to practise in Great Britain, and the hope is expressed that this will become increasingly infrequent.

The paragraph in which the Commissioners deal with the promotion of the growth of an unofficial medical profession in India will be found quoted in full in our abstract of the report at p. 161. While expressing the desire that there should be an increased number of private practitioners to provide medical treatment on western lines for the many millions of people of India, the Commissioners point out that "to substitute one set of officials to do certain Government work of a restricted character for another would not help matters," and are therefore of opinion that the question should be treated as distinct from that of limiting or reducing the number of Indian Medical Service officers in civil employ. To encourage independent practitioners they should have the advantages of state institutions. For example, Government hospitals should be made available as training grounds for young men about to take up private practice and prepared to work in them as assistants to the house surgeons and physicians for suitable periods at the outset of their career, and such men should be encouraged to return in after years. It is also advised that arrangements should be made by which practitioners of distinction should be allowed to join the visiting staff of the non-teaching hospitals in an honorary capacity.

The Commissioners see no reason to find fault with the present system of recruiting for the Indian Medical Service by an open competitive examination in England, but they recommend that all candidates should have had a hospital training, have been through a practical course of midwifery, and have had experience of treating the diseases of women and children. This is an essential condition, and the Commissioners have done well to underline it, but in dealing with the examination they have fallen into a curious error, which might have been avoided by reference to the official documents issued by the India Office to candidates. The Commissioners express the view that the present form of examination is not sufficiently practical, and recommend "that the

syllabus and marking of the examination be revised, and that a *viva voce* test be introduced." This is, as we have said, a curious error, for there is probably no more practical examination in existence than that for admission to the Indian Medical Service; as a matter of fact, of the total number of marks that can be obtained—5,100—less than half (2,350) can be obtained for the papers, and the remainder (2,750) for practical or oral examinations; 900 marks are given for the clinical examinations in medicine and surgery, 1,300 for oral examinations in the various subjects, 200 for operations in surgery, and 350 for the practical examination in pathology and bacteriology.

There is another point on which the Commissioners appear to have wandered from their text. They have considered it necessary to come to some finding with regard to the liberty enjoyed by certain officers to take fees for private practice, and allege that on this point a good deal of misunderstanding appears in the evidence. They assert that the claim to take fees as a right conferred by statute is mistaken; on the other hand, they say that non-official witnesses were under a wrong impression as to the extent to which members of the Indian Medical Service actually did practise, and as to the value of the fees earned. "Nowadays," the Commissioners state, "the evidence is clear that it is only special officers with special gifts and special opportunities who earn anything unusual." The Commissioners are of opinion that officers should continue to enjoy their existing privileges in the interests of efficient medical treatment, but they say that "steps should be taken to make clear to all officers at the outset of their careers that the permission is given at the pleasure of Government and to meet the needs of the country, and not as a matter of right." We will now make no further comment on the question of right—which is very open to argument—further than to say that it is indeed essential that the point should be made clear, for in the memorandum regarding the position of officers appointed to the Indian Medical Service, issued as an appendix to the regulations for the examination of candidates, it is stated that "except in the administrative grades and in certain special appointments medical officers are not debarred from taking private practice, so long as it does not interfere with their proper duties."

There are other points of importance in the recommendations which may be gathered from the abstract published at p. 161, especially those relating to teaching appointments, to the bacteriological department, and to the sanitary department, to which we have not now space to refer, but they will require very careful consideration, for the work done by the Indian Medical Service in India, both clinical and educational, is an achievement of which the medical profession may well be proud.

ANTISEPTICS AND LEUCOCYTES IN WOUNDS.

THE publication this week of the paper on the occurrence of an iodophil substance in the white blood corpuscles in health, by Colonel C. J. Bond, completes the series of articles on the influence of antiseptics on the activities of leucocytes and on the healing of wounds, which he has contributed to our columns during the last nine months. The experiments described have thrown a very interesting light on the problems investigated. To those who may be inclined to say that the inquiry does not lead to any immediate practical improvement in wound treatment, or solve any of the difficult problems of immunization, it may be answered that the biochemistry and physiology of reaction to injury in wounds will require much more study before we are in a position effectually to control wound infection. And there is good reason to hope that the new method of investigation Colonel Bond has worked out will prove useful in elucidating the problem of the movement of phagocytes and repair in wounds.

The method used was the application of pigment or starch or other organic substances both to closed aseptic incisions in man and animals, and to open granulating wounds. By the recovery of the phagocytes from these "leucocyte traps," and by the microscopical examination of the tissues at the site of the introduction of the pigment, it has been possible to study the activities of various kinds of phagocytes in different kinds of wounds under different conditions of treatment. The result is to give grounds for the conclusion that a circulation of leucocytes takes place in all wounds. In aseptic wounds nearly all the leucocytes which emigrate return to the tissues, reach the nearest lymphatic glands, or enter the general circulation. The wanderings of these cells could be traced because they had been caused to carry loads of pigment. In the case of many infected wounds these wandering phagocytes also carry cargoes of ingested organisms. If the organisms so ingested are not digested and killed by the phagocytes, they may, if liberated, establish a new focus of infection. There is reason to think that the phagocytes, especially if injured, may disgorge the pigment particles on their return journey, the pigment so liberated being taken up by the fixed tissue cells. Other observers have brought forward evidence to show that the same sort of thing may occur in connexion with the ingestion of pathogenic organisms by phagocytes.

The capacity of pus cells to ingest pigment from granulating surfaces is largely influenced by the local conditions in the wound, especially tension, drainage and exposure. The return immigration of phagocytes probably has an important bearing on immunization. It may provide the machinery for the introduction into the body of regulated doses of living or dead organisms as the case may be, and although the machinery may be self-regulating to a certain extent, it is easily thrown out of gear. The examination of white blood cells which have emigrated into aseptic wounds and the examination of incubated healthy blood shows that when treated with watery iodine solution the emigrated leucocytes give, even in health, a characteristic mauve-coloured reaction. This colour reaction is also given by living pus cells from healthy wounds, by some marrow cells, and by the cells which form granulation tissue. It is believed that this iodophil substance is either glycogen or a precursor of glycogen. Its occurrence in phagocytes is associated with defensive reactions on the part of these cells to foreign toxins and occurs chiefly in leucocytes of the polymorph class. It is also present in the cells of many (but not all) malignant tumours. Evidently we must cease to regard the presence of an iodophil substance in leucocytes as evidence of degeneration in those cells, and it is hoped that its chemical examination may be the means of throwing light on the metabolism of the cancer cell. To what extent this carbohydrate iodophil substance so elaborated itself acts in the reaction to infection is a point of great interest. Possibly it may be a by-product split off from some complex body of which the protein molecule may play an important part in the elaboration of antibodies or enzymes.

THE HEALTH OF NATIVE LABOURERS IN SOUTH AFRICA.

THE report of the Commission appointed by the Governor-General to inquire into the causes and extent of the prevalence and spread of tuberculosis in its various forms in the different areas of the Union of South Africa and also to study the extent and causes of the mortality of natives employed on the Witwatersrand mines contains information of much more than local interest.

With respect to the Commission's findings on the general subject of the etiology of tuberculosis or their administrative proposals it is unnecessary for us to speak, since the former cover familiar ground, and the latter, which in certain particulars are not unanimous, require for their appraisement close familiarity with local conditions.

The topics to which we desire to direct attention relate to the incidence of mortality upon different races at work in the mines and the influence of environment in determining the rates apart from differences of nationality.

The most valuable data relating to the former subject are derived from the Witwatersrand gold mines. The Commissioners give a table (the figures refer to the period 1905–12), according to which the mean annual mortality varies from 14.36 per 1,000 in the case of tribes from Natal and Zululand to 70.53 in the instance of tropical natives (that is, natives from Africa north of latitude 22° south). The rate for Cape Colony natives is 16.14.

Thus the tropical natives die at more than four times the rate of the Cape Colony natives. But even this enormous difference underestimates the disparity. If deaths occurring in the Native Labour Association's Compound among natives waiting to be assigned to or repatriated from mines are included, the ratio is over 5 to 1. The mean annual death-rate per 1,000 of the tropical natives (1905–12), combining deaths on mines and in compounds, is 88.13. Some idea of the significance of this figure may be derived from the following considerations: The exact ages of the native labourers are unknown, but the men may be presumed to be for the most part in the prime of life—say between 15 and 45. In the urban areas of the Cape Province for the census year 1911, the death-rates of male Europeans range from 4.3 at ages 15–20 to 9.59 at ages 35–45 (the corresponding figures for London, 1901–10, are 2.88 and 10.97), so that the tropical natives die at more than nine times the rate prevailing among Europeans. It is, of course, impossible to say what rate of mortality prevails among the adult tropical natives in their kraals, but the opinion of the Commissioners that the tropical native has shown himself unsuited from the health point of view for work on the mines is not likely to meet with dissent in this country.

Turning now to the question of environmental effects, it is shown that underground and surface workers are subject to very different rates of mortality. Taking first the incidence of certain diseases upon workers in the De Beers Consolidated Mines during 1903-12, we have for tuberculosis, underground workers 6.52, surface workers, 4.0. For pneumonia the rates are 93.35 and 30.30. The respective death-rates are 2.38 and 1.80, 20.53 and 4.23, while for all causes we have 28.49 and 11.13. The tuberculosis death-rate for Europeans (1911) in urban areas was 0.61 at ages 15 to 20, 1.33 at ages 20 to 35, and 2.09 at ages 35 to 45. The difference is not due to variations of tribal composition, since the same inferiority, with the exception of one group which seems explicable on other grounds, appears in a comparison of different tribes classified into underground and surface workers. The effect of unfavourable environmental conditions is also brought out in an instructive comparison of the rates of mortality prevailing in collieries when overtime was or was not worked. Thus, in the Witbank Colliery heavy overtime was worked in 1909, and the death-rate from all causes was 21.75. In 1910 there was no overtime during the last six months of the year, and the rate of mortality 9.82. In 1911 overtime was frequently worked, and the rate of mortality 16.69.

Of course, in drawing inferences from these figures, we must bear in mind the *post hoc ergo propter hoc* fallacy, and further the basal numbers are in several instances small; but the coincidences are at least remarkable. On the whole, there can be no doubt that the native labourers are subject to an enormously excessive incidence of pneumonia, and it is probable they experience a decidedly heavier mortality from tuberculosis than other native communities, although a satisfactory statistical proof of this statement cannot be furnished. There is also some reason to think that tuberculosis in natives runs a more severe course than in Europeans, having certain of the characteristics of the acute tuberculosis of young children. Out of 308 autopsies on East Coast and tropical natives, pulmonary tuberculosis was the predominant lesion in 140, general tuberculosis in 92, tuberculous peritonitis in 33, tuberculous spleen in 31, tuberculous liver in 7, tuberculous meningitis in 3, and tuberculous kidney and spinal caries in 1 case each. Indications point to an increase in the amount of tuberculosis and a tendency for its clinical manifestations to partake of the ordinary chronic types according to the length of contact between a tribe and European civilization.

It will be seen that the report contains valuable materials for studying the effect of adopting civilized conditions upon the native tribes. The picture is not attractive, but it is fair to observe that the hygienic conditions which existed in most of the native compounds were not such as to afford a fair test of the suitability of European methods for the maintenance of health and efficiency. Many of these defects are remediable, and we trust that the numerous specific recommendations of the Commission will be well weighed by the responsible authorities.

THE PREVENTION OF VENEREAL DISEASES.

IT is to be feared that the two tests suggested in the women's manifesto quoted at p. 172 will not help very much in answering many of the practical questions which arise with regard to the prevention of venereal diseases. How, for instance, are the tests to be applied to the matter raised by the Bishop of London in the *Times* on behalf of the London Council for the Promotion of Public Morality? So far as the first test affects the matter at all, the existence of brothels must tend rather to weaken than to strengthen "the sense of individual responsibility in relation to sexual conduct." The leniency with which brothel keepers are frequently treated is, the bishop says, misplaced, and he instances the case of one brothel keeper "whose takings were estimated at over £6,000 a year, and who admitted that in two years she had paid £500 to cab drivers for bringing customers to her house, was convicted and sentenced to pay a fine of £20 and 8 guineas costs. If the case were not so serious it would be laughable." The case is serious, but how is the second test to be applied to it? If, as the bishop assumes, public authorities are right in instituting proceedings against brothel keepers, how can

this measure "in actual practice be applied with impartial justice to both sexes and to all classes"? It can be applied to all classes, but how with impartial justice to both sexes? It would be applicable, no doubt, to a brothel keeper of either sex. But this does not take us far; what is to be said about the inmates of the brothel, out of whom the brothel keeper is alleged to make the large annual income? It may be possible for justice to regard those who live in the brothel, and constitute the attraction drawing "customers" to the brothel, and the men who visit it impartially, but the existence of brothels reveals an unlikeness between the sexes. The fact is indisputable that men and women are sexually different, and therefore on those who assert that men and women should in all respects be treated alike in sexual matters lies the onus of proving their assertion. The presumption is that the sexes should in sexual matters be treated differently. This presumption may be rebutted in this particular or in that, but it has to be rebutted. It cannot be taken for granted that men and women should be treated alike. The onus of proof lies on those who make this assertion. That very great judge, Mr. Justice Maule, said that the putting and answering of abstract questions on matters not before the court was unwise and calculated to embarrass the administration of justice. Therefore no opinion can be expressed on the suggestions for restrictions to be imposed upon women until the nature of these suggestions is known. But that some restrictions should be imposed seems to be the opinion of the London Council for the Promotion of Public Morality, for it asserts it to be notorious "that a very large number of men have been, and are being, incapacitated for the service of their country by diseases directly due to immorality"—that is to say, sexual immorality—and that the recent development of prostitution in London has been phenomenal. We believe that the extent of the prevalence of venereal diseases in the army has been exaggerated. The Financial Secretary to the War Office stated on November 16th, 1916, that the admissions to hospitals at home from this cause represented a ratio of 48 per 1,000 per annum, which was slightly less than the ratio in peace time. The ratio in 1912 was 56.5. No information has been published as to the British army in France, but we believe that the ratio there also is lower than in the army in peace. The incubation periods are known, and it would be interesting and instructive to learn what proportion of the cases of venereal disease in France have occurred at a length of time after leave home, which makes it probable, or certain, that the infection was contracted in this country. If, as from a consideration of all the circumstances we suspect would prove to be the case, a very large proportion were so contracted, then there would be an added responsibility on public authorities in this country to institute preventive measures.

THE STUDY OF TUBERCULOSIS IN AMERICA.

THE study of tuberculosis owes much to those who have themselves been victims of the disease. In the honourable roll of those who have passed away, the name of Dr. Edward L. Trudeau, of Saranac Lake, in the Adirondacks, will always hold a prominent place. He was not a great scientist, or even a student, but a man of wide human sympathy who devoted his whole powers to the service of sufferers from the disease which persistently dogged his own footsteps. He died in November, 1915, after having raised the sanatorium which bears his name. A Trudeau School of Tuberculosis has now been founded, "to perpetuate his name, and to continue the scientific investigations that were a lifelong interest of the American pioneer in tuberculosis research." The school will be conducted on a broad scale, and special facilities will be offered in the way of fellowships to young physicians who are themselves suffering from tuberculosis. Governed by a council which includes the names of leading teachers and sanitary officials in the United States, the school will include four equipped laboratories and the use of 760 beds in various hospitals and sanatoriums in the district. Two sessions for special courses of instruction are held in January and July in each year, and the schedule of the session which is being held at the present time gives evidence of the very thorough and complete manner in which both the practical and the theoretical sides of the question are dealt with. A warm appreciation of Dr. Trudeau and a study of his character and life work appeared in a publication known as *The Medical Pickwick* in March last, from the pen of Dr. Allen K. Krause of the Saranac Laboratory. It has since been published in a pamphlet. The same writer has recently contributed the results of three courses of study on immunity, carried on by him in the Saranac Laboratory. The first of these deals with the question of cutaneous hypersensitiveness and its clinical indication. Observations upon this point have hitherto not been conclusive. Clinical investigation must of necessity be spread over long periods, and the experimental method of scarification as practised by von Pirquet has proved to be unsatisfactory. By employing the intracutaneous method, as used by Mendel and by Moussu and Mantoux, Dr. Krause succeeded in obtaining a much more uniform series of results. Cutaneous hypersensitiveness he found to be always set up by the presence or by the establishment of a focus of infection. It varied directly with the extent and intensity of the disease, and was diminished during the healing process. Never entirely lost (except in some cases of intercurrent disease and pregnancy), it was increased by reinfection, but entirely absent during the course of some cases of general tuberculin reaction. A second series of experiments, instituted to study the relation of the anaphylactic state to resistance to tuberculous infection, contains many points of interest. Although not as yet leading to any positive conclusions, they serve to show very clearly that cutaneous hypersensitiveness may be present in cases in which a focus of tubercle exists, although there may be no evidence that the host of such a focus is suffering from tuberculosis. It is now generally believed that the toxic effects of tuberculosis are not due entirely to poisons set up by the bacilli alone, but that an important part is played by the products of disintegration in the tissues generally. A study of the general reaction produced by tuberculin proved that the absorption of actual focal products is the main cause of it. An interesting fact is demonstrated by Dr. Krause that whereas the products of a tuberculous focus are highly toxic when introduced into the circulation, such toxicity is completely annulled if the extract of such a focus be filtered and the residue dried. Neither the filtrate nor the residue produced any evidence of poisoning. The active poison must therefore be present in the cellular elements, either living or in process of disintegration.

THE DOCTOR AS WHIPPING-BOY.

MR. MORLEY ROBERTS, in a recent issue of *Folklore*, has discussed with much curious learning applied in an interesting and ingenious manner the question why the Greek scapegoat or outcast of the festival of the Thargelia was called a Pharmakos. Professor Murray has suggested that the term "pharmakos," the scapegoat, has a different derivation from "pharmakon," a drug, and that it was probably a foreign word. Following the suggestion of a foreign origin, Mr. Morley Roberts sought for some other word in the same area that might suggest where it came from. He now believes that the original word and the two original roots which make it up came from the Turkic family of speech. What looks like the word in various forms is to be found in the Turkic

tongues. In Turkish itself it is spelt "vourmak," which means "to make blows" or "to whip." When it is remembered that in the Greek ritual the pharmakos was beaten with agnus castus, squills, and other flowers, that may have some significance. The real meaning of "pharmakos" seems to be a beaten or whipped person, and by a later evolution one who has been driven out with blows. Probably in the earliest time it meant a medicine man, equivalent to those found among the Africans and Central Asians. Thus the verb *φαρμακεύειν* would mean, to drive out evil spirits with a whip or with blows. Such a connotation, Mr. Morley Roberts says, is earlier than to give poisons. It is well known that the treatment of disease among savages consists in driving out the spirit which is supposed to cause it by noisy incantations, or by physical ill-usage of the patient. The unfortunate sufferer was beaten, starved, smoked with evil-smelling substances, and drenched with every foul thing that the most obscene imagination could conceive. On this theory, therefore, our word "pharmacist" would have for its early meaning exactly that of the ancient medicine man or exorcist. Another point connected with "pharmakos" mentioned by Mr. Roberts is that the word "farmacion" is used in Turkey and Asia Minor, and as far east as Afghanistan, with the meaning of an outlaw, and quite commonly with that of a cunning, blood-drinking enemy of religion, a man who is a Satanist or devil worshipper. He has no doubt that "farmacion" is the same word as "pharmakos." Since its readoption by Eastern races "farmacion" has taken on a new meaning, and now often indicates a Freemason, one who is looked upon by the orthodox as an outcast and a scoundrel. The verb *φαρμάσσειν* means, according to Liddell and Scott, first, to medicate, secondly, to enchant or bewitch by the use of potions. The word certainly goes back to the ages of magic ritual and again to the expulsion of people who brought ill luck. It is, as Mr. Morley Roberts says, a natural instinct to turn out of a community those who seem to bring bad fortune, even if there be no peculiar feature in such expulsion. We venture to throw out a suggestion which may help in the solution of the question as to the true meaning of "pharmakos." The untrained mind has a tendency to attribute phenomena to a wrong cause; hence in matters of disease there arises a confusion of thought which makes the doctor responsible for the evil which he is endeavouring to prevent or cure. "Pharmakos," therefore, might easily be transposed from "pharmacist," one who administers remedies, to one who for his own purposes causes the diseases they are meant to cure. We know that even in modern times epidemics of cholera in Russia, Italy, and elsewhere are attributed by ignorant people to the baleful agency of the doctor, who is therefore likely to be made a scapegoat on whom is visited the wrath of the afflicted people.

THE HATCHING OF THE YELLOW FEVER MOSQUITO.

THE eggs of *Stegomyia fasciata*, "the yellow fever mosquito," are laid singly, either on the surface of the water, usually so close to its margin as to become stranded by capillary action, or on the wet margin itself. Moist conditions after laying seem to be essential to incubation, which takes a period of thirty or forty hours, by which time the larva is fully developed within the egg. Having reached this stage the eggs may retain their vitality, when dry, for long periods. Four or five months are usual, but in exceptional conditions a small percentage may survive and hatch after twelve months. Mr. A. Bacot described to a recent meeting of the Royal Microscopical Society some experiments he had been making with Dr. E. E. Atkin of the Lister Institute. They found that in clean water hatching may be long delayed, but if a foul fluid be added all, or a very high percentage of the dormant eggs, hatch frequently within five or ten minutes. After sterilizing the eggs and transferring them to tubes containing sterile fluids, the eggs responded most readily to the introduction of living yeasts or bacteria; hatching also followed the introduction of sterile autolyzed extract of brewer's yeast. Killed cultures of bacteria and sterile watery extract of brewer's yeast exerted a much feebler stimulus. Sterile filtrates of bacteria were less effective than killed cultures. The addition of acid, sufficiently dilute to cause the same or a somewhat stronger colour reaction than that produced by a bacterial culture, which caused the eggs to hatch, was ineffective. The addition of alkaline solutions was either without effect or caused only a small percentage of larvae to emerge, whereas on the addition of a little of a bacterial culture the eggs which failed to respond to the alkaline solutions hatched in large numbers within a few minutes. The explanation suggested was stimulus of the larvae by the smell, or some closely analogous sensation, followed by its active use of its egg-breaking appliance.

THE CAUSAL AGENT IN TYPHUS FEVER.

OUTBREAKS of typhus fever in Germany have occasioned fresh attempts to be made to discover the micro-organism of this disease. Bofinger[1] has figured appearances in the red blood corpuscles, which bear a very close resemblance to Seidelin's "bodies" in yellow fever; in view of the findings in the third report of the Yellow Fever Commission (West Africa) these objects may safely be excluded as bearing any causal relation to the diseases under consideration. Goldenstein,[2] when investigating an epidemic due to Macedonian prisoners of war at Sofia, obtained a motile bacillus in pure culture from the blood of thirteen out of twenty-four patients during life. Unlike the organism of Plotz, it grows under aërobic conditions. It is a very short diplobacillus, and on agar forms small dry scale-like colonies of yellowish colour. On subculture a more definitely bacillary form is assumed, and the colonies become softer in consistency; it reacts negatively to Gram's stain. Gelatine is not liquefied. The serum of patients with fully developed typhus fever agglutinated this organism by the hanging drop method in dilutions varying from 1 in 50 up to 1 in 1,600 in one case. Injection of cultures into guinea-pigs caused only the unsatisfactory phenomenon of fever, which lasted for five to ten days and then disappeared. The author himself preserves an open mind as to whether he has found the true causal agent.

MEDICAL EXAMINATION OF MEDICAL MEN UNDER 41.

THE Central Medical War Committee is receiving many inquiries from medical men who come within the terms of the Military Service Acts as to the meaning of a request they have received from the military authorities to present themselves for medical examination. The position of enrolled men is not affected by this request, for the question whether they will be required to accept a commission in the R.A.M.C. or not is one to be settled by the Central Medical War Committee in consultation with the Local Medical War Committee concerned. So much delay has, however, been caused in connexion with past calls by the uncertainty as to whether the men warned as likely to be called for service were or were not physically fit that the War Office decided that all medical men of military age should be examined in order to settle this question, it is hoped finally. Medical men receiving such a notice from the military authorities must comply with it, but need take no further steps until they hear from the Local or the Central Medical War Committee that any other steps are needed.

[1] *Cent. f. Bakt.*, Bd. 78, 1916, p. 73.
[2] Ibid., p. 82.

THE WAR.

NOTES FROM GERMAN FIELD HOSPITALS.

A WAR supplement to the *Beiträge zur klinischen Chirurgie* is being published bearing the name of the late Professor von Bruns of Tübingen. A number issued last December (Heft xxx) contains several papers on the early treatment of wounds in the Feldlazarett.

In the series of handbooks on the Medical Services of Foreign Armies, issued by the War Office, it is stated, in the section on Germany prepared by Surgeon-General W. G. Macpherson in 1907, that a Feldlazarett, or field hospital, is directly under the Army Corps principal medical officer, who brings it up as required to the neighbourhood of the main dressing stations, and who can employ the personnel of those not open during an action to reinforce regimental dressing stations and to supply the requirements of the slightly wounded collecting stations. It was divisible into two sections, and was normally equipped for two hundred patients, but was intended to expand according to circumstances for the reception of a much larger number. Its functions are summed up as "those of a mobile medical unit for the temporary care and treatment of wounds and sickness in the field army pending their evacuation to stationary or permanent hospitals." From the same source it appears that the Kriegslazarett was a clearing hospital to take over those wounded in field hospitals unable to bear transport, though it might, in exceptional circumstances, receive wounded direct from the field. It was administered by a specially organized clearing hospital detachment which took over equipment from the field hospital and obtained subsidiary equipment as required, either from local resources or from the advanced dépôt of medical and surgical stores. A clearing hospital detachment was to be mobilized in the proportion of one for each army corps. It was intended to be the link between the mobile field army and the lines of communication, and differed somewhat from the hôpital d'évacuation of the French army and from the clearing hospital of the British army, since it was of the nature of a large detachment of mobile personnel without a fixed equipment ready to undertake the establishment of a hospital out of local or other resources at any locality and at any moment. Hospitals (Etappenlazarett) corresponding with the British stationary hospitals on the lines of communication were to be established in each post. As a rule, they were to be officered by civil local practitioners, but at the head of the line, and at such other posts as might be considered necessary special hospitals were to be opened. They were intended primarily for the reception and treatment of the sick and line of communication troops, or of troops passing through the zone, but were to be prepared to receive large numbers of wounded after great battles. Connected with them were to be departments for slight cases of sickness or wounds, for convalescents and for infectious cases.

It is, of course, probable that the German organization has been modified in these respects since the beginning of the war, as has happened with the British, but this short sketch of the German system arranged before the war will give a general idea of the functions of a Feldlazarett.

Gunshot Injuries of the Limbs.

One of the papers is by Dr. Henes (Stabsarzt), who writes from experience in a Feldlazarett. He begins by pointing out that in mobile warfare two factors dominate the activities of the field hospital: an order to clear the hospital may be received at any moment, and from time to time the machinery of the hospital is taxed to the utmost by the number of wounded. Hence the machinery of transport to the stationary hospital should be rendered very efficient, and only those operations should be undertaken which are immediately necessary.

Haemorrhage and asphyxia, in so far as these have not already received treatment at the front, stand, of course, in the first line. The prognosis of abdominal injuries, with wound of the intestine, is, in the conditions, so unfavourable that it is not justifiable to devote much time to them at the expense of other wounded who may be saved by treatment. Wounds of the bladder should not be classed among these hopeless cases. Wounds of the chest, in the absence of severe haemorrhage or pneumothorax, are best dealt with on conservative lines, though they should be retained under observation as long as possible. On the other hand, injuries of the spinal cord should be transported to the stationary hospital as soon as possible. In view of the extreme importance of early treatment in the case of gunshot injuries of the head, it is desirable that no case of the kind should leave the hospital without a thorough inspection of the wound.

Henes refers to the high mortality curve still prevalent in gunshot injuries of the limbs, even apart from the presence of gas phlegmon. Gas phlegmon, however, is the main factor; and since it usually makes its appearance in the field hospital—that is, on the second to the fourth day after wounding—it is there that successful prophylaxis and treatment must be looked for. Although there is little unanimity as regards details in dealing with gas phlegmon actually present—some recommending large, others small and numerous incisions, some using one disinfectant, some another, and so forth—it is generally recognized that the main point is to lay the affected part freely open, and especially the pockets and recesses of the wound, in order to ensure thorough drainage and free access of air. Henes recommends extensive incisions including the whole of the affected area, both superficial and deep, with free opening up of all the pockets of the wound; and free incision of fasciae and muscle sheaths where necessary, and of the infiltrated interstitial tissues of the part. Muscles were rarely excised, since they were frequently found to recover after their fasciae and interstices had been opened up; on the other hand, it is recommended to remove all obviously necrotic portions. In order to facilitate the outflow of fluid and gas, the skin at the edges of the incisions made in the area of subcutaneous oedema and emphysema is raised from the underlying tissues and gauze drains inserted. Prophylactic incisions into the healthy tissue on the central side of the affected part have been employed, but Henes has been unable to form any final estimate of their utility. Where gas phlegmon is complicated with fracture, amputation is recommended, as also when a main artery is wounded. With regard to the prophylaxis of gas phlegmon and other severe infections, the guiding lines of treatment are generally recognized: to open the focus of infection and to immobilize the part. Every gunshot wound is to be regarded as primarily infected, whether due to bullet or shell.

The importance of good fixation in preventing the spread of infection is insisted on. In the less dangerous bullet wounds of the soft parts it may suffice to place the limb in a suitable position. Shell wounds of the soft parts require splints at least, but are better treated with plaster bandages. Gunshot fractures, with the exception of those of the hand and foot, always require the plaster bandage. Immobilization alone does not suffice in all cases. If there is a likelihood that severe infection is present the bullet track should be thoroughly examined. This should be done in all gunshot injuries of the bones and in those of the soft parts caused by hand grenades. Shrapnel wounds of the soft parts require less energetic treatment, only the more readily accessible fragments being removed; bullets are extracted only if they can easily be reached. The examination of the wound will include the arrest of bleeding, the removal of foreign bodies and splinters of bone, the removal of sharp points, and the adaptation and wiring of fractured surfaces, provision for drainage by tubes, gauze, and counter-incisions, and the removal of lacerated shreds of soft parts. In deciding whether bony fragments which are still attached by bands of periosteum should be removed, the danger of their injuring the soft parts and hindering free drainage should be considered rather than the risk of a false joint. It is not necessary to adhere so rigidly to the line of treatment here indicated in the case of gunshot injury of the joints, always excepting the shoulder and hip joints. The course here, when strict immobilization has been secured, is often surprisingly favourable, owing, probably, to the slighter degree of comminution and the absence of bulky soft parts around the joint. Where the bullet is not retained and the wound does not appear to be gravely infected the plaster bandage should be used, with a window to allow of ready examination during transport. If it is necessary to drain the joint the incision should be small, though sufficient to ensure free outflow. Where the injury has opened the joint widely, fragments of bone and shreds of soft parts should

be removed, sharp points smoothed down, and separated fragments replaced in apposition. Apart from these special points the injured joint should be handled as little as possible. The treatment of nerves and tendons belongs to the stationary hospital.

Wounded vessels should be ligatured. Plugging is to be avoided; it may appear to be adequate at first, but with the recovery of the patient and the increase of blood pressure it may prove to be inadequate. Amputation should be performed for wounds causing arrest of the circulation through the popliteal artery; and the same applies to similar injury of the axillary artery below the origin of the circumflex.

Dr. Mertens (Oberstabsarzt), who also writes from a Feldlazarett, discusses conservative treatment of gunshot injuries of the limbs on the field. He distinguishes three classes of cases: (1) Those in which the indication for amputation is clear; (2) those in which amputation is clearly unnecessary, and (3) doubtful cases. Should conservative treatment be adopted in class (3) in the hope of obtaining a more useful limb than primary amputation would afford; or should amputation be resorted to with the object of saving life? Mertens endeavours to answer this question from experience of a series of thirteen cases belonging to class (3) and treated on conservative lines. These cases were of so severe a kind that many surgeons would have considered amputation to be imperative. The results of the treatment were that two of the thirteen cases died; these would have been saved by primary amputation. Of the eleven that recovered, the limb was saved in four, and secondary amputation necessitated in seven. Four of the latter had stumps which were better than primary amputation would have provided; in two the stump showed no advantage; in three it was less serviceable. Expressed in percentages the results are: Recoveries, 84 per cent.; limb saved, 30.8 per cent.; amputation with a better stump, 15.4 per cent.; amputation without any advantage, 15.4 per cent.; amputation with disadvantage over primary amputation, 23.1 per cent.; deaths, 15.4 per cent. Two of the cases were of especial interest; both were bullet wounds of the popliteal space without retention of the missile, and the symptoms were almost identical. The apertures of entry and exit were small, and there was little external haemorrhage. The leg from the knee to the ankle was swollen and brawny, the dorsum of the foot doughy, the foot itself perfectly cold, dead white, and devoid of sensation. Arterial pulsation was absent. Above the ankle the skin was purple as high as the tuberosity of the tibia, and cold and anaesthetic as far as the middle of the leg. The foot and toes could not be moved, and were the seat of attacks of extremely severe neuralgic pains. There was marked projection of the skin behind the knee joint due to a large non-pulsating haematoma in the popliteal space. The limb was elevated and surrounded with cotton-wool, and in the course of a few days the circulation became re-established as far as the junction of the lower and middle thirds of the leg. Amputation at this level became necessary owing to the onset of gangrene in the foot and lower part of the leg. Recovery was uninterrupted. It was, of course, impossible to ascertain the precise cause of the cessation of the popliteal circulation in these two cases, but Mertens considers that the vessels must have been damaged, and, in the absence of pulsation in the popliteal haematoma, that the injury must have been in the nature of concussion rather than wound.

Open Treatment of Wounds.

Dr. O. Braun (Stabsarzt), who is surgeon to a Feldlazarett, discusses the aseptic and open treatment of wounds in it. The conditions, he says, were especially favourable—a stationary, fully-equipped field hospital, having ready communication with the front, so that the men were seen a few hours after they were wounded; and the possibility of retaining the patients until their wounds were healed.

Since the open method depends largely for its success on the quality of light and atmosphere, the conditions will vary with the locality. No final judgement, therefore, on the value of the method can be reached until reports have been studied from all parts of the front. Braun adopted the method in all suitable cases; it is appropriate only in certain stages of wound treatment. The first requisite in all wounds is the aseptic dressing. To leave a wound, which will require treatment, open during the first days is dangerous. It is of importance, however, that this dressing be applied in such a way as to ensure (1) efficient drainage, and (2) adequate "wound respiration" or access of air. Too great a bulk of material, the use of moist dressings and of impervious outer coverings militate against the last named. The essential advantage claimed for the open treatment is that it is an auxiliary in preventing the spread of infection. Its therapeutic factors are light and air. The bactericidal influence of sunlight outside the body is well known; within the body, experimental proof of such influence is lacking, but it appears to have been established in practice The therapeutic effect of free access of air to the wound depends upon the drying of the damaged and infected tissues, whereby the further growth of organisms is hindered; moreover, the absence of external pressure in the neighbourhood of the wound leads to exudation and so to mechanical flushing of the wound. Large infected wounds often show, after an abundant exudation lasting a couple of days, a marked and persistent diminution in the discharge. In suitably incised and drained phlegmonous wounds rapid subsidence of the inflammatory swelling takes place and the temperature falls. Soon fine fibrinous adhesions form, and a rapidly forming granulation layer shuts off the infection. At this point the open treatment should be discarded, for it is of no further use. In putrid infection and gas phlegmon the open treatment has proved no less satisfactory.

The presence of a progressive infection, as evidenced by clinical signs, is the indication for adopting the open method. The use of it in wounds that are free from irritation (as in many gunshot injuries of the head) or to ensure an uncomplicated course after extensive surgical treatment is not justifiable, since the danger of secondary infection is present. Moreover, even severe fractures with extensive damage to the soft parts often have a reactionless course with good drainage and aseptic dressing, provided good fixation and early surgical treatment are obtainable. It is not advisable to apply the open method during the first two days, since haemorrhage is often not immediate but occurs only when the commencing exudate loosens the thrombi in the vessels.

Technique.—A single layer of gauze is placed upon the wound surface, or, if the wound be deep, it rests upon its edges without entering its deeper parts. This prevents the formation of crusts on the raw surface and the possibility of secondary infection through dust, flies, and so forth. Once or twice a day the wound is irrigated with hydrogen peroxide or dilute boracic acid solution, high pressure being avoided. Drainage should be ensured by a tube in the deepest part of the wound or by a gauze tampon. Large wound cavities with much necrotic tissue should be filled with iodoform gauze for twenty-four to forty-eight hours; this should be followed by the use of drainage tubes, and from the third or fourth day on by the open treatment. Besides the layer of gauze on the wound, a second layer, not in contact with it, and supported on a simple wire-work frame or cradle, covers the part. Good immobilization is also of the greatest value. In cases in which the action of direct sunlight was employed (two hours' exposure of the wound daily, without any covering) the gauze was replaced, during the night, by a dressing of boracic ointment.

PARATYPHOID FEVERS.

An Epidemic of Paratyphoid A in a German Regiment.

KOEHLER[1] describes a small epidemic due to *B. paratyphosus* A which affected specially two companies of a certain battalion in November and December, 1915. Typhoid and paratyphoid B infections had been met with previously, but this was the first experience of paratyphoid A. Other troops were not affected. As regards diagnosis, during the first and second weeks a very high percentage of positive cultures were obtained from faeces and blood; when the temperature began to decline organisms could no longer be recovered from the blood, but the faeces continued to be positive in about a third of the cases. The detection of bacilli in the urine was less constant. A faecal carrier continued to excrete bacilli continuously for six months.

[1] *Cent. f. Bakt.*, I. Orig., Bd. 78. p. 421.

The author agrees with Bieling that the only fermentation reaction which differentiates paratyphoid A with certainty from other members of the typhoid-paratyphoid group is that with galactose. Endo-agar containing galactose is used, and after twenty hours' incubation plates inoculated with typhoid, paratyphoid B, or Gaertner bacillus appear of a deep red tint, the colonies themselves having a golden sheen; on the other hand, the paratyphoid A plate is pale red, and there is no golden appearance of the colonies.

An Unusual Paratyphoid B Carrier.

Gildemeister[2] reports the case of a German soldier who was found to be excreting paratyphoid B bacilli in the discharge from a fistula in his forearm. The man had suffered from "typhoid" eleven years previously; during convalescence pus had been evacuated from incisions in the arm at the site of the fistula and in the leg below the knee. The latter healed, but the arm continued to discharge. Examination by the *x* rays showed expansion of the middle third of the radius and a sequestrum. The patient's serum agglutinated his own bacillus in a dilution of 1 in 200, but did not agglutinate a stock culture of *B. paratyphosus* B or *B. typhosus* in 1 in 50. Repeated examination of the patient's faeces and urine failed to show any paratyphoid bacilli.

Geographical Distribution of Paratyphoid A.

Lehmann[3] has made an extensive study of the literature of the geographical distribution and epidemiology of paratyphoid A infections in which he pays a tribute to the pioneer work of the British army services in India. The collected data emphasize the fact that the propagation of the disease is due to human carriers. In contrast to typhoid, paratyphoid A, under pre-war conditions, was a disease practically restricted to tropical and subtropical climates. It remains, he thinks, to be seen whether it will maintain a foothold in Europe after the war.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Died on Service.

TEMPORARY SURGEON C. E. RECKITT, R.N.

Temporary Surgeon Charles Edward Reckitt, R.N., died at the Royal Naval Hospital, Haslar, on January 20th, aged 30. He was the elder son of Colonel J. T. D. Reckitt, R.A.M.C. (retired), was educated at Guy's Hospital, and took the diploma of L.M.S.S.A. in 1913. He subsequently filled the posts of clinical assistant at Guy's and of assistant house-surgeon, senior casualty house-surgeon, and ophthalmic house-surgeon at the Royal Infirmary, Hull.

SURGEON F. E. ROCK, M.D.

Surgeon Frank E. Rock, reported by the Admiralty as amongst the officers who lost their lives when the White Star liner H.M.S. *Laurentic* was sunk on January 25th, received his medical education at the Middlesex Hospital, and graduated M.B.Lond. in 1893 and M.D. in 1894. He entered the Royal Navy, and was with the fleet when it was mobilized in July, 1914, and was recalled for active service at the outbreak of the war. He took the D.P.H. of the Conjoint Board in England in 1904, and was for a time assistant M.O.H. Huddersfield. In 1908 he became the first school medical officer at Edmonton, where there is a school population of nearly 14,000. In 1912 he was appointed assistant M.O.H. and assistant S.M.O. of Edmonton. His amiable character, combined with his professional qualifications, had endeared him to every one associated with him at Edmonton. Dr. S. C. Lawrence, the M.O.H. and S.M.O. Edmonton, writes: "The news of the torpedoing of H.M.S. *Laurentic* in Monday morning's papers came as a great shock to me. I feel Dr. Rock's sudden death as I would the loss of a brother. Since we became closely associated in 1912 our relations have been most cordial and harmonious."

ARMY.

Died on Service.

CAPTAIN B. D. GIBSON, R.A.M.C.

Captain Benjamin Digby Gibson, R.A.M.C., died on service on one of the Eastern fronts on January 14th. He was the only son of the late Henry Fisher Gibson, Deputy Registrar, King's Bench, and was educated in the school of the Royal College of Surgeons, Ireland, taking the L.R.C.P. and S.Ire. in 1904 and the D.P.H of these colleges in 1909. After filling the post of resident medical officer of the Westmoreland Lock Hospital, Dublin, he went to the Cape, where he served for some time as assistant district surgeon at Britstown, Cape Colony; but was in practice in Dublin prior to taking a temporary commission in the R.A.M.C.

CAPTAIN E. J. MCSWINEY.

Captain Eugene John McSwiney, who died of pneumonia at his home in co. Cork on December 26th, 1916, was educated at Trinity College, Dublin, and graduated M.B., B.Ch., B.A.O.Dublin in 1915. He at once joined the R.A.M.C., his commission being dated July, 1915. He had served with the British Expeditionary Force in France, but came home ill at the end of last year.

Killed in Action.

CAPTAIN H. L. JARMAN, R.A.M.C.

Captain H. L. Jarman, M.B., R.A.M.C., was reported as killed in action in the casualty list published on January 28th. He was attached to the South Wales Borderers. He was appointed a temporary lieutenant in the R.A.M.C. from the Canadian Army Medical Corps in May, 1915, and was promoted to temporary captain on May 31st, 1916.

Wounded.

Captain M. A. McDonald, M.C., M.B., Ch.B., R.A.M.C. (temporary).

Lieutenant J. A. Noble, M.B., R.A.M.C. (temporary).

Prisoner of War.

Major W. MacM. Pearson, I.M.S., previously reported believed taken prisoner at Kut-el-Amara, now reported as prisoner of war.

DEATHS AMONG SONS OF MEDICAL MEN.

Barlow, Patrick Basil, Private, Grenadier Guards, youngest son of Sir Thomas Barlow, Bt., Physician Extraordinary to the King, died of blood poisoning following trench feet on January 18th, aged 32. He was educated at New College, Oxford, and graduated B.A. in 1908, taking the M.A. two years later.

Frend, John Arthur, Second Lieutenant Royal Field Artillery, eldest son of Dr. Frend, of Rosario, Argentine, and of Eastbourne, killed on January 17th, aged 24. He was born in Rosario in 1892, and was educated at Petersfield and at Tonbridge School, where he was school praepostor, represented his school at rackets and boxing, and was a member of the Rugby fifteen and of the shooting eight. He was studying for the profession of civil engineer, and when the war began enlisted in the Honourable Artillery Company. In January, 1915, he was nominated for Woolwich, and there was senior under officer, and gained the Sword of Honour. In July, 1915, he was gazetted Second Lieutenant in the R.F.A., and went to the front in September, 1915.

Maurice, Charles Henry Pryse, Second Lieutenant Royal Berkshire Regiment, died on January 24th, at a casualty clearing station, as the result of an accident, aged 27. He was the eldest son of Lieutenant-Colonel W. J. Maurice, R.A.M.C., of Ealing.

Porter, Leslie, Captain and Flight Commander, Royal Flying Corps, son of Captain David Porter, R.A.M.C., of Donegal, missing since October 23rd, now reported to have died of wounds as a prisoner in Germany. He was a pioneer of the motor industry in the North of Ireland, and founded the firm of Leslie Porter (Limited). He was an ardent racing motorist, and took part in the Paris-Madrid race; in the race his car overturned, and his companion, Mr. Nixon, was killed.

Ward, Otho Charles, Captain Indian Infantry, second son of the late Major Espine C. R. Ward, R.A.M.C., killed on January 11th. He was born on February 17th, 1884, got his first commission on January 21st, 1903, joined the Indian army on April 20th, 1904, and became Captain on January 21st, 1912. He had served in the 124th Duchess of Connaught's Own Baluchistan Infantry since December 5th, 1905.

MEDICAL STUDENTS.

Craig, William Colston, Second Lieutenant South Lancashire Regiment, the third son of Mr. Wm. Craig of Partick, died on January 20th from wounds received in action. He was in his 23rd year, and was a medical student at the University of Glasgow.

Rennison, Walter Martyn, Second Lieutenant 3rd Battalion Royal Irish Regiment, was the son of the Rev. Canon Henry Rennison, Kilpatrick Rectory, Wexford, and was a second year medical student at the School of Physic, Trinity College, Dublin. On the night of December 30th, 1916, he was in charge of a patrol which came under machine gun fire. He was

[2] *Cent. f. Bakt.*, I Abt., Bd 78, 1916, p. 129.
[3] *Cent. f. Bakt.*, I, Orig., Bd. 78, 1916, p. 49.

reported wounded and missing at the time but has since been officially reported killed in action. He is the twenty-seventh student of the School of Physic, Trinity College, Dublin, who has lost his life in the present war.

HONOURS.

THE following awards and promotions have been made to medical officers for services rendered in connexion with the war:

D.S.O.

Temporary Captain Dyfrig Huws Pennant, R.A.M.C., attached head quarters, R.F.A.

For conspicuous gallantry and devotion to duty. He dressed and remained with three wounded men under the most intense fire. He has at all times set a splendid example of courage and coolness, and has on many occasions done fine work.

Military Cross.

Lieutenant Daniel Davies Evans, R.A.M.C.(S.R.), attached Royal Dublin Fusiliers.

For conspicuous gallantry and devotion to duty. He displayed great courage and determination in collecting and attending to the wounded under very heavy fire.

Temporary Captain Rupert Farrant, F.R.C.S., R.A.M.C., attached Shropshire Light Infantry.

For conspicuous gallantry and devotion to duty. During the whole day he tended wounded in an open trench, which was subjected to a violent bombardment. On one occasion he led a party into "No Man's Land," and brought in several wounded men.

Captain Wilmot Fenwick, Australian Medical Corps.

For conspicuous gallantry and devotion to duty. He worked continuously for forty-eight hours under very heavy fire, tending and dressing the wounded. He set a splendid example of coolness and courage throughout

Temporary Captain Frank Anthony Hampton, M.B., R.A.M.C., attached Royal Scots.

For conspicuous gallantry and devotion to duty. He continually went out under very heavy fire and remained in the open attending to the wounded with the utmost bravery and coolness. He has previously done fine work.

Temporary Captain John Samuel Levis, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. He displayed great courage and determination when in charge of stretcher-bearers under heavy fire. He has on many previous occasions done fine work.

Temporary Captain Francis Cromby Macaulay, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. He displayed great courage and determination in collecting and attending to wounded under very heavy fire.

Temporary Captain Philip Hugh Rawson, R.A.M.C., attached S. Staff R.

For conspicuous gallantry in action. On several occasions he rescued wounded men under very heavy fire He set a fine example of courage and coolness throughout.

Temporary Surgeon George Lee Ritchie, M.B., R.N., attached R.N.D.

For conspicuous gallantry and devotion to duty. He displayed great courage and determination in collecting and attending to the wounded under very heavy fire.

Captain Arthur Ashton Smalley, M.B., R.A.M.C.(S.R.).

For conspicuous gallantry and devotion to duty. He displayed great courage and determination in attending to the wounded, working continuously for forty eight hours under heavy fire. He set a fine example throughout.

Temporary Surgeon Geoffrey Sparrow, M.B., R.N., attached R.N.D.

For conspicuous gallantry and devotion to duty. He displayed great courage and determination in collecting and attending to the wounded under very heavy fire.

Captain Herbert V. Stanley, M.B., R.A.M.C.

The Military Cross has also been awarded to the Rev. P. Hallding, R.N., Rev. M. G. J. Ponsonby, and the Rev. D. C. Williams for assistance rendered to the wounded.

To be Brevet-Colonels.

Lieutenant-Colonels H. A. Haines, M.D., R.A.M.C., C. J. Jacomb Hood, 2nd Eastern General Hospital, R.A.M.C.(T.F. Reserve).

To be Brevet-Colonel on the Retired List.

Lieutenant-Colonel A. W. Browne (retired pay), late R.A.M.C.

To be Brevet-Lieutenant-Colonels.

Majors B. A. Craig (temporary Lieutenant-Colonel), R.A.M.C., F. McLennan, M.B., R.A.M.C., A. H. Safford (temporary Lieutenant-Colonel), R.A.M.C., C. R. S. Bradley (temporary Lieutenant-Colonel), R.A.M.C., Commanding Training Centre.

To be Brevet-Majors.

Captains A. E. G. Fraser, R.A.M.C., and R. W. D. Leslie (temporary Major), R.A.M.C.

CORRECTION.

The following is among the corrections made in the *London Gazette* announcements, issue of January 1st, 1917, p. 38: The award of the Military Cross to temporary Captain Francis John Morris, R.A.M.C., is cancelled and the following substituted: Captain John Morris, M.B., F.R.C.S., R.A.M.C.(T.F.), attached Cheshire Regiment.

MENTIONS.

In addition to the lists of medical officers mentioned last week (p. 129) and elsewhere in this issue, as the recipients of honours and promotions, the names of the following officers of the R.A.M.C. have been brought to the notice of the Secretary of State for War for distinguished services rendered in connexion with the war:

Lieutenant-Colonels G. M. Goldsmith, W. J. Macnamara, and T. B. A. Tuckey.

Major W. I. de Courcy Wheeler.

Captains P. J. Gaffikin and W. A. Robertson.

NOTES.

DISINFECTION BY A CURRENT OF DRY HOT AIR.

THE Vondran hot air disinfector depends for its action on passing a current of hot air under pressure through the disinfecting chamber. Tests of the apparatus under experimental conditions have been previously described (BRITISH MEDICAL JOURNAL, May 20th, 1916, p. 734). Baerthlein (*Cent. f. Bakt.*, I. Orig., vol. lxxviii, p. 527) now records the results of the use of a large apparatus capable of accommodating forty-five complete suits of clothes. He finds it very well suited for killing lice and nits, this being accomplished by a total exposure of 80 minutes at 63° C. or of 35 minutes at 85° C. Even fur and leather articles do not appear to be damaged under these conditions. On the other hand, as might be expected, bactericidal effects were less marked; typhoid bacilli were still alive after exposure to 100° C. for two hours, although some strains of staphylococci were killed. This failure does not appear to be due to deficient penetration by the hot air, but to the fact that moisture is essential in addition to an elevated temperature for the destruction of the life of most micro-organisms.

England and Wales.

LONDON COUNTY COUNCIL.

THE London County Council has arranged with the Commissioner of Police for messages summoning medical aid in cases of urgency, when required by certified midwives, to be transmitted by the police, who will be furnished with lists of practitioners willing to attend such cases. These practitioners are to be notified that neither the Commissioner of Police nor the Council can accept responsibility for the payment of fees, but that the boards of guardians in London are willing to pay the fees in cases in which the patients or their relatives are too poor to do so themselves.

Owing to the increase in the number of cases requiring treatment under the scheme of school medical service the Council has arranged with certain of the school treatment centres for provision for a large number of additional cases. Among other centres, Bermondsey is to provide for an additional 1,320 nursing cases a year, and the services of the doctor are to be extended for two half-days a week; Islington North for 440 additional cases a year; and Hammersmith for 440 refraction cases and 220 ear, nose, and throat cases a year. The "schools for mothers" which receive grants from the London County Council number 22; the average attendance at the 400 class meetings in the year was 15.

The Local Government Board has approved the scheme for diagnosis and treatment of venereal disease as formulated by the London County Council,[1] the Public Health Committee is now considering the steps to be taken under the scheme for the publication of information on all matters relating to venereal disease and its treatment.

It was reported to the Council that at the end of 1916 the numbers of cases actually being dealt with under the Mental Deficiency Act at the expense of the local authority in London were 536 males and 594 females. Of the remaining cases of alleged mental defect of which notice has been received since the Act came into operation, no action has been taken for various reasons in 182; 136 have been left to be dealt with under the Poor Law; 256 have been ascertained not defective or not subject to be dealt with by the local authority for London; and 253 are still under consideration.

[1] BRITISH MEDICAL JOURNAL, December 2nd, 1916.

VENEREAL DISEASE: A WOMEN'S MANIFESTO.

A circular, or manifesto, signed by a number of distinguished women, including members of the medical profession, was issued a short time ago containing the following paragraphs, which have a bearing upon questions of prophylaxis:

Suggestions are sometimes made for dealing with this scourge by restrictions imposed only on women. Such efforts always have been and always must be futile. While men complain that they are infected by some woman, each woman may with equal certainty affirm that she was infected by some man, and it is usually by men that infection is carried to unsuspecting wives and innocent children.

We urge the Government and Parliament, and all persons interested in the subject, to apply the following tests to every proposal dealing with this great problem:

First, will it tend to strengthen or to weaken that sense of individual responsibility in relation to sexual conduct which is the strongest and most effectual bulwark against the spread of disease?

And, secondly, can it, and will it in actual practice, be applied with impartial justice to both sexes and to all classes?

Only by measures which can satisfactorily meet these tests will the eradication of venereal diseases be brought about.

Dr. Helen Wilson, 19, Tothill Street, S.W., is prepared to receive correspondence on the subject.

THE TREATMENT OF VENEREAL DISEASE IN LIVERPOOL.

The report of the Medical Officer of Health for the City of Liverpool shows the arrangements provided in conformity with the scheme of the Local Government Board for the diagnosis and treatment of venereal disease. A joint committee was appointed by the city council consisting of representatives of the Health Committee, the Port Sanitary and Hospitals Committee, together with two additional medical men nominated by the Liverpool Medical Institution, representing respectively the staffs of the various hospitals and the general practitioners in the city, to prepare the scheme. The medical faculty of the university has instituted a post-graduate course for medical men in modern methods of diagnosis and treatment. Dr. F. W. Wilson, the lecturer in venereal diseases, is now conducting the first course. The city bacteriologist, who is also the professor of bacteriology, has made full and complete arrangements to enable every medical man to obtain free of charge, and at the cost of the city council, a scientific report on any material from a patient suspected to be suffering from venereal disease. A detailed account is given of the arrangement entered into with the several hospitals, both general and special, within the city for the clinical treatment of the diseases. The arrangements seem to be similar to those being set up in other parts of the country. We notice one point of interest in the memorandum furnished by Dr. Mackenna of the Liverpool Skin Hospital: "Some years ago the experiment was made of having an evening clinic three nights weekly. This was continued for about six years, but it was not found that the evening hour specially attracted venereal cases."

THE TREATMENT OF VENEREAL DISEASES IN THE CITY OF LONDON.

At a meeting of the British Hospitals Association at St. Bartholomew's Hospital, on January 26th, a paper was read by Dr. William J. Howarth, M.O.H. for the City of London, on "The treatment and control of venereal diseases, with special reference to the voluntary hospitals." He said that the present position in respect to venereal diseases was that the information necessary to formulate a scheme of prevention was fully available, but the actual execution of the work was rendered difficult because of the circumstance that it was upon man himself that the success of the scheme depended. The fact that the diseases were due to a breach of the moral code made the community, as a sort of protection against further breaches of the code, attach a shame to them which in its turn caused the offender to hide his shame. Inadequacy of treatment was the direct effect of this, and with it much domestic misery and lifelong regret. The public must learn the seriousness of the consequences of this enforced privacy. After discussing the terms of the circular and regulations of the Local Government Board he gave an account of the city scheme. It is an independent unit, and has elected not to join in the combined arrangements entered into by the metropolitan counties and county boroughs. It has established its centre for treatment in connexion with St. Bartholomew's Hospital. A small building belonging to the corporation and designed for use as a hospital has been made the centre for out-patients, and some beds will be provided for ordinary routine work. Equipment and alterations to the cost of £1,000 will be made by the corporation, and the upkeep of the clinic to an estimated cost of £1,800 for the first year, exclusive of the cost of salvarsan or similar drug. For cases requiring special treatment beds will be provided in the great hospital. The clinic will be under the charge of a member of the hospital staff assisted by a whole-time non-resident officer and a resident medical officer. The part to be played in the working of the clinic by the general practitioner has not yet been settled.

Commenting on certain aspects of the work as affecting voluntary hospitals, Dr. Howarth said that in his opinion the difficulty of adjusting the financial arrangements was best met by a lump sum payment, by "an agreement with the local authority to guarantee a maximum sum, with the proviso that if expenses do not amount to that agreed, only the amount of expenditure actually incurred to be paid, meets the requirements." After a year revision would be possible. He emphasized the responsibility of the hospitals to make a greater effort than that entailed in the provision of treatment. They should become centres of medical life, each in its own area, and the profession ought to be attracted to the local institution and encouraged to visit it freely, with the object of keeping in touch with the latest progress. The staff should be leaders in matters of policy affecting the welfare of the profession as a whole.

He mentioned, as a matter of additional interest, that certain arrangements had been made at St. Bartholomew's Hospital apart from the City scheme, for putting into practice what may be regarded as a form of preventive treatment, such as has been urged by Sir Bryan Donkin (BRITISH MEDICAL JOURNAL, January 27th, p. 135). The facilities for this treatment are only used by soldiers.

Scotland.

THE TREATMENT OF VENEREAL DISEASE IN ABERDEEN.

THE scheme of State provision for treatment of venereal disease was promulgated by the Scottish Local Government Board at a considerably later date than that for England. So that, whereas the scheme is already working in England, tentative plans are just now in progress of formulation in Scotland. It is proposed that the city of Aberdeen and the counties of Aberdeen, Kincardine, and Banff shall work a joint scheme of treatment for their areas. It is considered that the Royal Infirmary of Aberdeen will best provide the necessary centre, but that that should not preclude the extension of work to other centres if necessary. It is thought that eight to twelve beds will be necessary for in-patients and two day clinics and two evening clinics for out-patients. A special medical staff will be put in charge of the department, consisting probably of a physician and surgeon in consultative practice, who will rank on the staff of the infirmary and give part-time service, and a whole-time assistant medical officer, who will serve for a period not exceeding three years. The diagnostic work will be arranged for at the laboratories of the infirmary. It is proposed to indemnify the general practitioner for procuring and transmitting to the pathologist samples of blood and secretion taken from cases: 5s. for each sample of blood taken directly from a vein and 2s. 6d. for each sample of secretion or discharge. Further, there is a suggestion that the services of the special medical staff of the clinic that the medical practitioner may desire to consult shall be paid for by the patient on the usual terms, or at some fixed rate. It is proposed that the administration of the scheme should be under the direction of a special committee, to be elected yearly, of representatives of the several local authorities of the areas, the board of the infirmary, the medical faculty of the university, the medical staff of the infirmary, and of the medical practitioners of each area, together with the medical officers of health.

It will be seen that this tentative proposal differs from the general arrangements made in England in three

particulars: There are proposals to pay the general practitioner for procuring pathological material, to pay consultants for their services, and to form a special committee of administration including representatives of all bodies affected by the new scheme, and not to relegate it to an existing standing committee.

THE HOUSING QUESTION IN SCOTLAND.

The crying need for some amelioration of the present conditions of living of the working classes in overcrowded slums in large industrial centres is recognized by every one. Medical officers of health have demonstrated the direct relation between overcrowding and death-rate, and its results upon the spread of epidemic disease are obvious.

The municipal authorities in Edinburgh and Glasgow have recently been discussing the whole problem at a congress, convened specially for the purpose, and agreement on certain points was reached.

This result may influence future legislation. Already a scheme had been prepared by the President of the Local Government Board in which local authorities were urged to appoint local housing committees to investigate the special needs of their own districts, but considerable difference of opinion was expressed by expert advisers as to the general scheme of rehousing to be adopted. The tenement or self-contained flat system is more in vogue in Scottish then in English towns. The greater hygienic advantages of the small house or cottage surrounded by sufficient air space cannot be disregarded and the balance of opinion would seem to turn in favour of the latter, although the convenience of proximity to factories and workshops still inclines many people to perpetuate the urban tenement plan.

Apart from these considerations, which may be classed to some extent as sentimental, the main question becomes a financial one. The complaint of high rentals for tenement dwellings is stated to be essentially caused by the need for providing interest on the capital originally borrowed for building. If such interest could be eliminated the cost of acquiring land, erecting buildings, and maintaining them could be met without the imposition of a high rent. By the substitution of public for private enterprise it would be possible to provide the interest on borrowed capital from other sources. The working-man tenant would directly benefit by the change of landlord. Under present conditions there is generally a covert antagonism between the two, and the tenant is apt to suffer in many small matters which tend to discomfort if not to deterioration of health. Experience in Scotland, as elsewhere, is showing that the large sums of money spent on sanatoriums is not yielding the expected return. The Medical Officer of Health for Edinburgh, speaking of the housing question in relation to tuberculosis, urged that the present method of dealing with the disease should be reversed, and that the money now expended on sanatoriums should be devoted to the provision of healthy dwellings. The time would certainly seem to be ripe for a reconsideration of the whole problem, and the opinions expressed at the Scottish Congress will doubtless carry weight in future discussions.

Ireland.

DR. E. COEY BIGGER, Medical Commissioner of the Local Government Board for Ireland, has been appointed by the Crown to be a member of the General Medical Council, in succession to the late Dr. James Little.

THE BOYLE MEDAL.

The Boyle medal of the Royal Dublin Society was presented to Dr. Henry H. Dixon, F.R.S., Professor of Botany in the University of Dublin, at a meeting of the society over which the president, Lord Rathdonnell, F.R.S., presided. A report from the Science Committee stating that Professor Dixon's investigations into the long-standing problem of the ascent of sap in trees had led him to formulate a theory which had met general acceptance. He had also introduced the experimental method of teaching botanical science in the University of Dublin. Professor Joly, F.R.S., said that Strasburger, to whose laboratory at Bonn Dixon had gone as a young man, had spent a considerable portion of his life upon the problem, but had left it unsolved. The society, he added, was most careful in awarding its Boyle medal, and at the present rate there would not be more than some twenty Boyle medallists in a century; but whatever names were added Professor Dixon's would be one of the most distinguished on the roll.

VENEREAL DISEASE.

At a meeting of the Executive Committee of the Ulster Branch of the National Council for Combating Venereal Disease, held on January 26th in the Belfast City Hall, Sir John Byers, M.D., in the chair, a resolution was unanimously passed asking the Local Government Board of Ireland to take the necessary steps to bring arrangements in Ireland into line with the Local Government Boards of England and of Scotland in dealing with the prevention of venereal disease.

MEDICAL CERTIFICATION UNDER THE INSURANCE ACT.

The duties of medical certification of sickness benefits under the Insurance Act in Ireland have been discharged for the past twelve months by the medical attendants of the insured. This arrangement, in addition to giving satisfaction to the profession in Ireland, has conferred great advantages upon insured persons who can now get the necessary certificates from their medical attendants at their own homes, or at the doctors' houses while undergoing treatment, instead of, as under the old arrangement, being under the necessity, especially in rural areas, of making a journey of perhaps ten or fifteen miles to meet a "medical adviser" who was appointed by the Commissioners to issue certificates for sickness benefits, and who was not the medical attendant of four-fifths of the insured persons for whom he issued certificates.

At the time the certification question was settled, as a basis for the remuneration of practitioners for certifying alone, the country, according to the density of the insured population, was divided into three groups:

1. In county boroughs and towns of 10,000 population and upwards one shilling and threepence per insured person.
2. In the sixteen county areas where the density of the insured population, excluding towns of 10,000 and upwards, equals or exceeds 0.02 per acre the sum of two shillings per insured person.
3. In the sixteen county areas where the density of the insured population is less than 0.02 per acre the sum of two shillings and sixpence per insured person.

Groups 2 and 3 were further subdivided into the already existing dispensary districts under the Medical Charities Acts, and the capitation fees for certification assigned to their respective groups or counties where payable. The sum available for distribution in any certification area is the total of the capitation fees of the number of insured and exempted persons in such area or district. This sum, when ascertained by the Commissioners, is divided amongst the medical attendants of the insured, who have signed agreements to certify for their sickness benefits in any particular insurance area in proportion to the number of certificates they have issued.

In Group 1 the capitation fee of 1s. 3d. works out, in a fairly typical insurance area of this group, at about 1s. per certificate issued. In Groups 2 and 3 the fee per certificate issued averages generally 2s. and 2s. 3d. respectively. Some approved societies require more certificates than others, and this causes much variation when the remuneration is calculated per certificate issued. The capitation fee, however, never varies in any insurance area, and was fixed on the assumption that approved societies would only demand certificates when necessary, and not insist upon their legal right to obtain weekly certificates in cases of long-continued disability where the cause of incapacity is only too apparent.

For the purpose of issuing many of these certificates for sickness benefits long journeys, in rural areas, have to be undertaken when the necessity to visit insured persons for the purpose of medical treatment has ceased; owing to this, and to the great increase in the cost of travelling, many doctors have found the amount of remuneration for certification altogether inadequate, and would have terminated their agreements for certification with the Commissioners at the end of last year only that they were

persuaded that representations would be made to the Irish Insurance Commissioners as regards the inadequacy of the remuneration, especially in those rural areas with a capitation fee of 2s., and in the borough and urban areas with a capitation fee of 1s. 3d.

At the end of the first quarter, when the Commissioners came to calculate each doctor's pay, they stated that they found several of the medical certifiers had omitted to give some items of information required on the counterfoils of the certificates to make payment on the dispensary district basis possible; the Commissioners informed the Irish Medical Committee that if certain doctors insisted on being paid in accordance with their agreements the payment would be deferred for a very considerable time until the necessary information was supplied. The doctors' representatives agreed to accept payment for one year on the county instead of the dispensary district basis, the Commissioners undertaking:

(1) That the arrangement would not in any way prejudice the agreements entered into between the Commissioners and the medical certifiers. (2) That the Commissioners should indemnify any doctor against any substantial loss by the calculation being made on the county basis instead of the dispensary district. (3) That all payments for certification should be made after January 1st, 1917, in accordance with the signed agreements, which provided, in certain areas, that the dispensary district should be the unit for the calculation of remuneration.

The Commissioners have now notified the Irish Medical Committee that all payments falling due from January 1st, 1917, will be made in accordance with the signed agreements between the doctors and the Commissioners, and that they would consider all complaints lodged with the Irish Medical Committee, up to September 30th last, by medical certifiers who claim to have suffered by the change made by the Commissioners in making payments calculated on the county basis instead of the dispensary district.

The arrangements made for the employment of temporary medical referees and their appointment by the approved societies have brought forth general protests from doctors in all parts of Ireland, as being a breach of faith on the part of the Insurance Commissioners, who had undertaken, when the certification question was being settled, to retain the appointment of medical referees in their own hands, and to select doctors of high professional standing who would be acceptable to the profession. At the time the certification dispute was settled the medical advisers passed a resolution demanding preferential treatment in recognition of past services in the capacity of medical advisers. This claim was warmly supported by certain approved societies which had shown themselves very hostile to the profession in their fight for the cardinal principle that the medical attendant should certify, in the first instance, his insured patients for sickness benefit. Under the present arrangements for medical referees the profession recognizes for the time the triumph of the ex-medical advisers' claim for preferential treatment which was only made possible by the Insurance Commissioners yielding on the question of the appointment of medical referees to the approved societies.

Correspondence.

THE PROPHYLAXIS OF VENEREAL DISEASES.

SIR,—The letter from Sir Bryan Donkin in the BRITISH MEDICAL JOURNAL of January 27th contains certain statements and expresses some opinions that may not commend themselves to many members of the profession and of the public who are interested in the important subject to which his letter refers.

In the beginning of his letter Sir Bryan states that the subject is essentially medical, and at its end he goes further and says that it is, and should be regarded as, exclusively medical. Are not the constitution and the report of the Royal Commission on Venereal Diseases a sufficient answer to and contradiction of this statement? The prophylaxis of venereal diseases is neither essentially nor exclusively a medical subject, and it is, I believe, an unfortunate and misleading suggestion that the problem can be successfully dealt with, if disconnected from the moral and religious factors in the case.

It may be argued that these have done little in the past in checking the gratification of sexual instinct by "irregular intercourse," but it is possible that they have done more in this direction than Sir Bryan is disposed to credit them with, and the ground is not obvious for his statement that they will not do better in the future than they have done in the past, and there is ground for thinking that the reverse may be true. The present war in its origin, methods, and issues might serve as an illustration of the growing weight and force of moral considerations and ideals. It is, further, advisable to reflect that things at present might be worse than they are, had moral and religious instruction not been employed and enforced in the past. There are some good points in the Mosaic Law.

Sir Bryan thinks that it is "mediaeval doctrine" that leads the public "to regard sexual diseases from a different standpoint from that which they maintain towards all others." Should he not qualify his statement by saying that the public regards the factors involved in the causation of these diseases as different from those of practically all other diseases, and, whether the doctrine is mediaeval or not, will he maintain that the public are not justified in so doing? In matters of diagnosis and treatment there is no need for any difference of view in regard to these diseases as compared with others, but in the matter of causation and prevention I submit the case is different.

The bearing on the question of the passages quoted from Sir James Crichton-Browne's letter is not very clear, but many will disagree with Sir James when he says that "the prevention of syphilis and the prevention of immorality should be kept wholly distinct from each other." They are not distinct, and the benefits of separating them are not obvious. If it is meant that the one is a material, and the other a moral question, and they should, therefore, not be associated, the suggestion is about as sensible as it would be to recommend that from the meaning of the terms "effort," "progress," "self-denial," and "aspiration," all moral significance should be excluded, or to assert that the causes of the falling birth-rate are exclusively physical or mechanical.

Sir Bryan makes no reference to alcohol as a factor in the causation of venereal diseases, or to its importance in the question of prophylaxis. The view of the Royal Commission is represented in the following sentences:

Abundant evidence was given as to the intimate relation between alcohol and venereal diseases. Alcohol renders a man liable to yield to temptations which he might otherwise resist, and aggravates the disease by diminishing the resistance of the individual.

Alcoholism makes latent syphilis and gonorrhoea active. It makes the treatment of syphilis and gonorrhoea much more refractory.

The facts point to the conclusion that decrease in the use of alcohol will be an important factor in diminishing the prevalence of venereal disease.

The profession knows, and the public is perhaps beginning to realize, that alcoholic intoxication and drunkenness are among the great allies and procurers of sexual immorality and venereal diseases.

All will agree with the words of the *Lancet*, "preventive treatment is a logical step forward, and ought to be taken at once," but let us beware of an exclusively professional or scientific interest in the matter, and recognize that the prophylaxis of venereal diseases involves more than modern pathological or biochemical science alone can provide. To take a narrow and material view of the question might alienate the sympathy and support of many people in the country whose interest in the matter is not less than that of the medical profession but who view it from a different standpoint.—I am, etc.,

Inverness, Jan. 30th. T. C. MACKENZIE.

THE FUTURE OF THE MEDICAL PROFESSION.

SIR,—"Captain (T.F.)," in his letter from France dated January 12th, says, "The absence of conscription in Ireland leaves it open to young Irish practitioners to profit by the military service of English, Scottish, and Welsh doctors, and set up in the homes of the absentees to their obvious hurt. . . . How can we hope that the British Medical Association can right this wrong?"

While regretting that the same conditions, as regards medical service, have not been enforced in Ireland as in the rest of the United Kingdom, I would like to assure

"Captain (T.F.)" that his fears are to a very large extent groundless, as indeed your note to his letter indicates. Speaking for the Medical School of Trinity College, Dublin University, I have ascertained that, omitting South Africans, one hundred and sixteen (116) men qualified since the war broke out. Of these one hundred and twelve (112) have volunteered and been accepted by the Royal Navy or the Royal Army Medical Corps. Of the remaining four (4), two (2) volunteered but were rejected on grounds of ill health, one is at present house-surgeon in a Dublin hospital, and one cannot be traced. Further, of the seventy-one (71) men who qualified in the year preceding the war sixty-nine (69) are known to be serving in the Royal Army Medical Corps, one is a medical missionary, and one cannot be traced. As regards the young practitioners of Dublin University, I am sure "Captain (T.F.)" will agree that there is no "wrong," such as he suggests, to be put right.—I am, etc.,

A. FRANCIS DIXON,
University Professor of Anatomy,
Trinity College, Dublin.

January 24th.

SIR,—The two communications on this subject published in the JOURNAL of January 20th must be of the greatest interest to every member of the medical profession, and it is to be hoped that they will be read and re-read by all, and that many general practitioners may be moved to publish their views on this most vital question.

May I offer a few observations?

I. Do not let us "label" ourselves "State Medical Service" men, or anything else. I always say of politics, once a man puts on his party colours he takes off his considering cap. There is much that is good in both articles. We want to pick out the best points in each, and so construct a future medical service for the nation as a whole, with as few defects as possible, remembering what human nature is.

II. It is fairly certain that when the men come back they and their dependants will not be content with the standard of pre-war medical treatment. No blame attaches to the pre-war general practitioners; we did our best with inadequate tools. The men when they come back will expect and demand that use be made of the most recent aids to a correct diagnosis and to a rapid recovery—bacteriological examinations, vaccine and serum therapy, radiograms, electrical treatment, and access to the services of specialists, etc.

III. Medical practitioners must more clearly realize, and be prepared to adjust their affairs accordingly, that the art of medicine becomes more and more preventive; that in proportion as success is obtained in this direction so general practice will become less remunerative per head of population. Our present method of remuneration in private general practice is simply Gilbertian! For a small fee we give our patients advice, which, if followed, may prevent their ever having occasion to visit us again for that malady. We ought to be paid so much per annum for preventing illness as far as possible, and treating it when it does arise.

IV. A fairly clear distinction must be kept between:

(*a*) *Services due to the Community as a Whole.*—Here we shall have medical officers of health, school officers, officers in charge of institutions, etc. (All part-time appointments to be abolished at once, as they ought to have been long ago.)

(*b*) *Services due to the Individual.*—Here we shall have the general practitioner responsible for the domiciliary treatment of the sick individual.

Between (*a*) and (*b*) we shall have:

(*c*) The bacteriologists, *x*-ray operators, and specialists, not forgetting the dental officers.

Remuneration of (*a*) by State at fixed salary; of (*b*) on insurance lines per capita, from insurance funds provided partly by the State and partly by contributions from the insured; of (*c*), drawn partly from State and partly from insurance funds.

V. If the foregoing considerations are agreed to, it follows:

(*a*) That there will be a demand for a larger proportion of the population to be admitted to insurance benefit.

(*b*) That the general practitioner will be wise to agree to this, bearing in mind the progress of preventive medicine.

What the profession ought at once to do is to consider carefully how far they are prepared to go in this extension of insurance, and to work out details of such an extension.

The more I think about it, the logical conclusion seems to be somewhat on these lines:

Universal Insurance.

Every individual to be insured against sickness. Every medical practitioner to have the option of working under the scheme.

The Insured Person.

Benefits.—Services of practitioner upon whose list he has been accepted; access to services of bacteriologists, *x*-ray operator, specialists, and, I hope, dentist, etc. Institutional treatment?

Contributions.—Workers, with wage below income tax limit, at fixed rate as at present. Those members liable to income ax to pay in proportion to income for self and dependants, the tax to be levied and collected with income tax.

The Medical Practitioner.

Duties.—To give domiciliary treatment to those persons accepted by him, he to have right of refusal. To make use of the services of bacteriologist, etc., whenever advantageous or necessary.

Remuneration.—Payment per capita from insurance funds. Note.—A limit should be placed to list of accepted persons. By way of example, the individual list to be limited to 2,000 at 10*s.* per head.

Dispensing.—Except in rural areas, this to be done by chemists or at special dispensaries. In towns, hospitals, dispensaries, clinics, *x*-ray work, etc., to be centralized as much as possible.

Mileage.—Some allowance to be made in rural areas, either by grant (which would require to be an increase on the present one) or by the rural practitioner receiving a slightly increased capita fee as compared with that of the town practitioner.

A few of the advantages of such a universal scheme would be—

To the Medical Profession.—1. Advance in preventive medicine and increase in number of whole-time officers under IV (*a*), would be welcomed by the general practitioner as making his burden lighter and not affecting his income. 2. Security of income, freedom from accounts. 3. (*a*) Whole-time health officers, independent of individual interests; (*b*) retention of relationship of family doctor to patient. 4. Incentive for the general practitioner to keep up to date, for in proportion as he does so he will be assured of a fair income and have increasing leisure—the quicker he gets his patients well the more time he will have for other interests.

To the State.—A satisfactory solution of a thorny subject.—I am, etc.,

January 26th. RURAL G. P.

SIR,—There is a good time coming for those who live long enough: State service with "eight hours' work, eight hours' play, eight hours' sleep, and eight dollars a day." Severe cases will go to hospital; and all others presenting any difficulty will go to specialists. We shall all retire on our well-earned pensions at 55, and live as long and as happily as any other civil servant. But this blissful future is still ever so far away; and it will never come at all if we remain as modest in our demands as Dr. Gordon Ward.

I suppose the average age of qualifying is 24; Dr. Gordon Ward then proposes that each man should have two years' work at a good hospital, which every one must admit would be most desirable. Unfortunately, at the present time there are not enough hospitals to go round; and the authorities would certainly not be prepared to pay men even their present salaries if each had only half a dozen beds to look after.

Dr. Gordon Ward then suggests that the luckless young doctor who has spent ten years at hard labour and at least £1,000 in cash, should be employed by the State at the handsome salary of £300 a year, rising by decreasing instalments; so that at the age of 32 he will be getting £450 a year. Apparently this is the limit, unless he can gain favour by trenching on the work of the specialists. Out of this princely income he has to provide his car or carriage—or perhaps such luxuries are not permitted to a State doctor. Dr. Gordon Ward bewails the threatened shortage of doctors, but if the State has nothing better to offer there will not be much temptation to enter the profession. A young artisan has enough allowed him during his apprenticeship to pay for his board, and as soon as he is out of his time he has sufficient wages to marry and live comfortably. Surely a young doctor should be at least as well provided for, and this cannot be accomplished unless he has a commencing salary as soon as he is qualified of at least £500 a year net.

However, to descend to present-day conditions. Surely

the time has arrived to make public provision for all dependants of insured persons. With all its defects, and in spite of the low rate of the capitation fee, the Insurance Act has provided a much better service for the working classes than they had hitherto. To include the wives and families might cost the State four times as much as at present, but as we are cheerfully spending six millions a day on killing Germans, we can certainly afford to spend the same amount, or even twice the amount, in a year to preserve the health of British women and children. If this cannot be arranged during the war, it should be one of the first reforms put in hand after peace is concluded. In any case, such provision should be made at once for the dependants of our soldiers and sailors, instead of their being left, as at present, to the charity of the medical profession. We cannot very well refuse charity in such cases, but the more we give in the way of gratuitous service the more we are encroached upon, and similar services demanded of us on the pain of being accused of want of patriotism if we do not immediately assent.—I am, etc.,

North Shields, Jan. 22nd. F. C. MEARS.

MOBILIZATION OF THE PROFESSION.

SIR,—I wish to endorse very heartily the letter, signed "Rejected," which appears in your issue of January 27th.

In the town where I reside and carry on medical work the call to active service has met with a good response: those left behind are men who would be certain to break down under military stress; at home they work hard and efficiently. In addition, many of them are engaged in work with troops as civil medical practitioners. If they were removed to some other town, I fail to see what would be gained, and I question if their work would be as satisfactory as it is now.

The necessity to bring about a "general post" does not arise, and such a move would only cause confusion and disorder. It would not help on the war; the general public would suffer. In fact, no thoughtful person with any knowledge of medical work amongst the civil population at the present time would entertain the proposition for one moment.—I am, etc.,

January 28th. M.B.

SIR,—Week by week letters appear in the JOURNAL regarding mobilization of the profession generally; even if it be not true, there is something behind it all which is backed up by the constant cry from the Medical Department of the army of "More doctors wanted."

I have given the subject much thought and have been at the inner working of the department for recruiting medical officers as well as on a medical tribunal, and I pray for space to state a few generalizations and try and draw some conclusions.

I admit there are exceptions, but they cannot and do not alter general conditions. The bulk of the letters show that some men have had too much to do, others far too little. I have talked with many who have been at the front and are now home again, and only wish they were back in the army for a quiet time. The majority of medical officers in the army at the present time were civil practitioners before the war and were used to working longer hours, which leads to two generalizations:

1. Army doctors, on the average, work less than four hours a day in a closed area.
2. Private practitioners, on the average, work over twelve hours a day in an extended area.

Deduce from these two and it naturally follows that (1) private practitioners generally are making more money; (2) that the Army Medical Department is not making the best use of the material it has in hand.

When we get to this latter conclusion and we press for change we are told that those in authority know best. Granted they do know more than the outsider, yet outsiders can see a good way through a wood. Reasoning further from known facts and analogy with other Government departments, it is notorious that no other department has had more voluntary aid than the Army Medical Department as in (*a*) voluntary hospitals at home and abroad; (*b*) convalescent homes; (*c*) ambulances given and free carriage to wounded; (*d*) voluntary work by doctors in hospitals.

Every British workman has been asked and has given, at a price, overtime, and work at his best speed, and craftsmen have allowed dilution of labour. No business man arranges his work on a basis of four hours' work a day. Why, then, should the Army Medical Department not alter? If army doctors are not available then those obtainable must be made to work longer hours. I do not think the profession will shrink from this, for a more patriotic body does not exist. We know many have made great sacrifices willingly and will continue to do so. Here I say the sacrifices of the army medical territorial officers have been unequalled. In private practice before the war, and only doing medical war work as a side issue at a loss, they were called in at the outbreak of war, and are still (although many are over 45 years) doing active duties. Surely we can relieve some of these back to their practices, or to the remnants of them, and replace them by forcing all men under 41 years into the service. True, it may be, we are a "starred" profession, but there is just as great a reason for the doctor to go as the labourer when the country calls him.

This brings one to the subject of medical examinations for fitness for service. Scathing remarks are constantly being made in the press. There is an element of truth in them, and they are true even of medical men passed for service. We know that even C3 men are being called up for duty of some kind, why not doctors? I know some passed for home service, working their twelve hours a day for themselves, who could surely now, after two years and a half of piling up riches for themselves, sacrifice something for their country, and do hospital work at home or abroad and free a lot of elder men who are working in our hospitals to do lieutenant work—work they are used to, and who can be spared from their own practices or they would not have entered such posts. Many other thoughts come to me, but knowing as we do the usefulness of the motor to the profession, surely more can be done by motor service.

Not a word do I say personally against the heads of our Army Medical Department. Well do I know their ability and their self-sacrifices in their country's cause. With them I want to rouse others to do their bit.—I am, etc.,

Woolwich, Jan. 23rd. J. CLARKE, M.B.

MEDICAL CERTIFICATES AND THE WAR OFFICE.

SIR,—There has been much discussion on this subject lately, and not a little blame has been meted out to our profession, much of it, I am persuaded, unfairly. Medical certificates are one of the nuisances of medical practice, and with the exception of insurance certificates they are practically never paid for. Before the war they were a scandal and a nuisance. In most hospitals they are given out anyhow by the house-surgeons to any one who asks for them. The third party who may be injured by such a certificate has only himself to blame. If the employer, or other third party, wants an impartial certificate, he should himself apply for it, and pay for it, but that is just what he is not willing to do.

The truth is that, with the exception of insurance certificates, the ordinary medical certificate is worth nothing. It is asked for by the party concerned, read by the party concerned, and given to the party concerned, for nothing. No person of common sense would attach any importance to such a document. What have civilian medical certificates to do with the War Office? What are the Medical Boards for? Surely to decide as to the fitness of a man to enter the army or to go to the front. Why should they wish to shield themselves behind a civilian doctor's certificate? It has nothing to do with them; they are there to decide the question for themselves. Their proper course is to take no notice of any unofficial certificate. But if they are in doubt, as in some cases they must be, then let them refer the man to a specialist appointed and paid for this purpose by the War Office, for an opinion which should be confidential. If a mistake is made and a man is passed who should not have been, the War Office will then be able to say that they took every care, and they can refer whoever complains to the report of an eminent specialist, who will take all the blame and be quite willing to do so.

The truth is that many of the Medical Boards do not want to take the trouble of examining cases for themselves

and prefer to accept the opinion of the patient's civilian doctor, and then, when this works badly, they turn on the civilian doctor and blame him for not doing their work for them.—I am, etc.,

London, W., Jan. 18th. P. LOCKHART MUMMERY, F.R.C.S.

THE MEASURE OF THE POTENCY OF ANTISEPTICS—THEIR THERAPEUTIC VALUE IN WOUNDS.

SIR,—Captain Parry Morgan in last week's issue (p. 136) refers to our paper in the BRITISH MEDICAL JOURNAL of January 20th, and in regard to the antiseptics in common use he thinks that our figures do not apportion credit to these substances "according to their utility." Had we not shared the doubt, so widely entertained, as to whether they possessed any considerable measure of utility *qua* antiseptics, in the treatment of wounds, we should not, at this time, have pursued the search further.

Captain Parry Morgan deals with the use of antiseptics under two specified conditions, namely, (1) treatment of a wound by free irrigation, and (2) the application of the antiseptic to the infected tissues in a dressing. For the first he desiderates rapid bactericidal action; all will agree that an instantaneously acting bactericide, devoid of harmful effect on the tissues, would be of inestimable value. But on turning to the actual state of affairs one finds that, as we have already said, "the mechanical detergent action of a more or less continuous flow of fluid plays an important part; this can be accomplished by irrigation with some antiseptic solution, as in Carrel's procedure." With what share in the process the antiseptics hitherto available have been credited may be judged by the following quotations from Sherman[1] in his exposition of the most thorough application of the mechanical method devised by Carrel; he says: "It must be understood, however, that Dakin solution is not a panacea or 'cure-all,' and, while it has undoubted bactericidal properties and is an almost ideal antiseptic solution, in that it is non-toxic and non-corrosive, it is not effective unless used with discretion and judgement." Again: "The solution must be in constant contact with the tissues." And, finally: "It is possible that Dakin solution represents but 20 per cent. of the cure, and that the technique of Carrel represents 80 per cent."

Turning now to Captain Parry Morgan's second condition, where an antiseptic dressing is applied to the infected tissues, he states that test-tube experiments in which a relatively small volume of antiseptic is added to pus produces conditions analogous to those in a wound, and suggests that he would base his conclusions as to the potency of an antiseptic according to its action in such a mixture. We would submit, however, that this constitutes as great a departure from the rational conception of the practical problems involved as if it were suggested that the surgeon should content himself with the belief that he was treating a suppurating wound adequately if he merely stirred up antiseptic into the pool of pus which bathed its surface.

We have clearly indicated our agreement with the view that the removal of dead tissue and the conversion of the wounded area as far as possible into a free surface by surgical procedures, so as to promote drainage, are essential factors in the treatment of infected wounds. But even when these objects have been achieved a potent and therapeutically desirable antiseptic will prove a valuable auxiliary in leading to the extinction of infection. We do not believe that it is possible in any test-tube experiment to reproduce exactly the conditions in a wound, but we have demonstrated that, taking the whole of the results in conjunction, the comparative inefficiency of the common antiseptics under practical conditions has been paralleled by their behaviour in the tests to which we submitted them. On the other hand, flavine and brilliant green exhibited such outstanding characteristics as seemed to warrant the conclusion that they marked a definite advance in the search for therapeutic antiseptics. The truth of this opinion has been confirmed by a very considerable mass of clinical evidence accumulated by a number of experienced and independent observers. Therefore we have felt justified in bringing forward the details of our work in the hope that others may be encouraged to give these substances a trial, and also that it may prove of value in the discovery of still more efficient compounds.—I am, etc.,

[1] *Proc. Roy. Soc. Med.*, 1916, x, Sect. Surg., p. 1.

London, W., Jan. 27th. C. H. BROWNING.

THE INCOMPLETE CURE OF THE CONSUMPTIVE.

SIR,—I cordially agree with Dr. Camac Wilkinson concerning the use of tuberculin. I know that opinions are divided on this point, but after careful investigation and personal test I have decided that those who fail to obtain good results adopt a faulty technique. I personally begin with P.T.O., continue with P.T., and then in due course finish off with O.T. or B.E. I administer it hypodermically twice a week and increase the dose rapidly. My latest case is that of a girl suffering from tuberculous peritonitis. A consulting surgeon said the case was unsuitable for operation and advised open-air treatment. There were difficulties in the way, and she was treated at home in an ordinary house without the aid of a trained nurse. I gave tuberculin on the above plan, and she is now in excellent health. I have treated several other cases similarly, and all have benefited. In no case has there been any serious symptom such as profuse haemorrhage or a spreading of the disease as the result of the treatment.—I am, etc.,

Bournemouth, Jan. 30th. W. J. MIDDLETON.

ECONOMICS OF INSURANCE.

SIR,—On December 16th you published a letter in which I pointed out that there was more than a fear that the Insurance Act would check the fall in the tuberculous death-rate, specially by reason of its economic effects on the "borderland" class.

On January 20th you published a summary of the report of the M.O.H. for Manchester, which deplores the rise in that rate in Manchester in the years 1913, 1914, and 1915, and it is added that in the poorest classes "the disease was more fatal . . . than in previous years."

I had not expected so soon this startling illustration of my argument. Those of us who have made a study of economics, and of the effects of the policies of *laissez faire* and of paternalism on the wages, welfare, and the health of the poorer classes, argued in 1911 and ever since, that the Act must have this tendency. We made the prophecy, we pointed out the reasons why, and the people whom, it would harm. The report of the Manchester M.O.H. demonstrates every one of our positions. The onus of proof that the Act is not causing serious harm now lies on its advocates.

When we say "the Act" we do not mean that it is solely responsible, but we do say that it is the worst and the culmination of a long series of statutes which have results exactly contrary to their purposes, which all have as their pretext the amelioration of poverty by subsidies, and as their inevitable result the crushing of the poor by indirect and unseen taxation, the lowering of their health, and the sapping of their manhood.

I suggested that the British Medical Association rulers should appoint a committee to inquire into the effects of the Act on the nutrition of the poor. The mere announcement of such an intention would stay the hand of the Commissioners in their efforts to rivet the chains so strongly that they can hardly be removed. If such an inquiry were actually to be held, and its verdict was, as I believe it must be, very much in the terms of the Manchester report, it would be decisive.

With our predictions, with this report to hand, and with the rapid increase of wages and fall in death-rate (which in the case of tuberculosis was the most rapid in the world up to 1895), which were the feature of the reign of *laissez faire* and sound economies up to the retirement of Mr. Gladstone, no reasonable man will deny that we have a strong prima facie case. It is certain that the fears of increasing tuberculosis are not unfounded. Is it possible that the British Medical Association should stand as officially approving a law which may have that effect?

Until the doubt is set at rest, their attitude of acceptance of the Act at the valuation of party politicians, who, mistaking aspiration for achievement, think that the Act is good because they wish it to be good, is not only unscientific but highly unpatriotic.—I am, etc.,

Rayleigh, Essex, Jan. 22nd. B. G. M. BASKETT, M.B.

A TEMPORARY CLUB FOR TEMPORARY R.A.M.C. OFFICERS IN LONDON.

Sir,—Is it not possible to organize a club or meeting place where temporary R.A.M.C. officers passing through London could meet and know each other? They must have most interesting experiences to exchange as to war work.

If a committee could be formed and a small subscription asked for, it should be possible to hire some convenient house or make an appeal in the press for the use of a house, or some medical man or sympathetic outsider might loan a house to the committee suggested, say, for six months or so.

At such a centre a few emergency bedrooms might be provided, but lists of lodgings could be collected, and perhaps some friends might even give hospitality for a few days to such medical officers—most interesting guests!

Everything should be done on the quietest scale, and only light refreshments provided at first, to see if the place caught on. Letters, etc., could be received and kept for officers, and perhaps some ladies might attend in the afternoon and give help.

In my opinion experiences the most unique and valuable will be lost unless some such place is started.—I am, etc.,

George J. H. Evatt,
Surg on-General (Ret).

J.U.S. Club, London, S.W., Jan. 23rd.

Universities and Colleges.

UNIVERSITY OF LONDON.

University College.

The abridged University College *Calendar for 1916–1917*[1] contains all necessary information. The Faculty of Medical Sciences occupies some three dozen of its pages.

UNIVERSITY OF EDINBURGH.

University Court.

At a meeting of the University Court on January 22nd letters were read from the University Courts of Glasgow and Aberdeen agreeing to send representatives to a joint conference on the subject of the compulsory retirement of Principals and Professors of the Scottish Universities on the attainment of a definite age limit or after a definite period of office.

The following additional Examiners were appointed: Professor W. D. Halliburton, M.A., F.R.S., King's College, London (Physiology); Professor Robert Howden, M.A., M.B., D.Sc., University of Durham (Anatomy and Anthropology); and Dr. Claude E. Ker (Medicine in its bearings on Public Health). Dr. John Mackie Whyte, University of St. Andrews, was reappointed additional Examiner in Practice of Medicine.

The Court finally adjusted the draft ordinance (Foundation of Chair of Tuberculosis), and directed that it should be duly signed and sealed, and forwarded in accordance with Section 21 of the Universities (Scotland) Act, 1889.

Dr. Alexander James and Dr. Claude B. Ker were reappointed Lecturers on Infective Fevers, and Dr. Graham Brown Lecturer on Neurology.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

A comitia was held on January 25th, when Dr. Frederick Taylor, the President, was in the chair.

Admission of Member.

Vivian Bartley Green-Armytage, M.D.Bristol, L.R.C.P., having passed the necessary examination was admitted a Member of the College.

Licences.

Licences to practise physic were granted to eighty-three candidates who had passed the requisite examinations.

Diplomas in Public Health.

Diplomas in Public Health were granted, conjointly with the Royal College of Surgeons, to the following candidates: G. E. Beaumont, M.B.Oxon., M.R.C.P.Lond., M.R.C.S.; Vynne Borland, M.B., Ch.B.Glasg.; Seemampillai Francis Chellappah, L.M.S.Ceylon, L.R.C.P., M.R.C.S.; Una Griffin, M.B., B.S. Lond.; Sachchidananda Hoshen Paul, L.R.C.P., M.R.C.S.; Mary A. van Ingen, M.B., B.S.Lond.

Election of Councillors.

Dr. Michell Clark, Dr. W. E. Wynter, Dr. James Tayler, and Dr. Herbert Spencer were elected councillors.

University of Bristol.

Dr. Newton Pitt was elected a Representative Governor of the University of Bristol in place of Sir William Church, resigned.

Treatment of Venereal Disease by Quacks.

The President stated that at the invitation of the Association of Municipal Corporations he had taken part in a deputation to the President of the Local Government Board, urging that unqualified practitioners should be prevented from undertaking the treatment of venereal diseases.

Lectures.

The President also announced that he had appointed Dr. Saundby to be Harveian Orator, and Dr. E. S. Reynolds to be Bradshaw Lecturer for this year, and that the Council had appointed Dr. T. M. Legge to be Milroy Lecturer for 1918.

Reports.

A report was received and adopted from the Committee of Management recommending that Rugby School, which is already recognized for instruction in chemistry and physics, should also be recognized for instruction in biology.

After some further formal business the President dissolved the comitia.

[1] *University of London: University College Abridged Calendar.* Session 1916-17. London: Taylor and Francis. 1916. (Demy 8vo, pp. 422.)

The Services.

EXCHANGES.

Captain R.A.M.C. in charge of troops in Egypt desires exchange with M.O. on home station, hospital, or sanitary. Cardiff or London district preferred.—Address No. 250, British Medical Journal Office, 429, Strand.

Captain R.A.M.C.(T.F.), M.O. to Territorial battalion in Eastern Command, desires exchange with M.O. on Recruiting Medical Board, in or near London.—Address No. 450, British Medical Journal Office, 429, Strand

Obituary.

WILLIAM OLDRIGHT, M.D.,

PROFESSOR OF HYGIENE, TORONTO UNIVERSITY.

By the death of Dr. Oldright the profession of Canada loses one of its oldest and best known members. He was the son of Major Oldright of the 81st Regiment, and was born at St. Kitts in 1842. He was educated at the University of Toronto, graduating B.A. in 1863 and M.B. in 1865. When the writer entered the Toronto School of Medicine in 1868 he came in contact with young Oldright, who had begun practice, and was keenly interested in medical literature. He was a good linguist, and our teacher in physiology, Dr. Bovell, used his brains in the translations from German and Italian works. Many hours we spent together over Teichmann's monograph on the absorbent system, the beautiful plates of which served as texts for many lectures of our dear old teacher. To the stimulus of his example the writer owes his reading knowledge of medical German. Early in his career Dr. Oldright became interested in public health, and served for years as chairman of the Provincial Board. He was the first lecturer on the subject in the Toronto School of Medicine, and when the Medical Faculty of the University was organized he became professor of hygiene. His life-work may be said to have been the promotion of wise sanitation throughout the Dominion, and that the organization of the Provincial Boards has reached its present high standard is due in no small measure to his persistent advocacy of the needs of sanitation. Dr. Oldright had in high degree the sense of professional responsibility, and was an active supporter of the Canada Medical Association and of the local societies. There was in his character a fine fibre of earnestness, and a large circle of friends and patients appreciated the devotion with which he served their interests. Through men of his stamp is transmitted the Hippocrates tradition—in lives lived *caute, caste et probe*.—W. O.

HENRY HUMPHREYS, M.A., M.D.Cantab., M.R.C.P.

Dr. Henry Humphreys, who died at his house at Richmond on January 16th, at the age of 72, was a man of brilliant talents, who, had it not been for his weak health, might well have attained great distinction. He was the son of Mr. Charles Humphreys, an architect in the City of London, where he was born. Educated at the City of London School, he proceeded to St. John's College, Cambridge, where he graduated as fifth wrangler, proceeded to the M.A. degree in 1870, and became a Fellow of his college. He studied medicine at University College, London, took the diplomas of M.R.C.S. and L.S.A. in 1872, the degree of M.D. in 1875, and the M.R.C.P. in 1877. In

1873 he joined the Middlesex Hospital, where, after holding the posts of house-physician and obstetric house-physician, he was appointed medical registrar, and prepared the interesting and carefully compiled reports for 1875 and 1876. In 1877 he married a daughter of Dr. E. Duncan of Leadenhall Street, and in the same year went to reside at Manchester, having been appointed physician to the Pendlebury Hospital for Sick Children.

He threw himself into his new duties, and had already given promise of good scientific work, when, under unforeseen trials, his health broke down, and he was compelled to resign office, after three years' tenure, and abandon a career for which he was eminently fitted. For the next ten years he practised as a physician at St. Leonards, where he was attached to the hospital, and after that for five years at Fleet, and finally at Torquay, whither he removed in 1898. Here for another decade he spent a quiet and industrious life, not overburdened with practice, and taking much interest in the Natural History Society and Museum, of which he was president. His last work was to prepare an elaborate study of mosses for a meeting at Launceston, where the first symptoms of another breakdown occurred, which necessitated his retirement from active work. He never entirely recovered. For nine years he was devotedly tended by his wife. He died after a few days' illness from heart failure.

Dr. Humphreys was a man of fine character, modest and retiring, and thoroughly unselfish. During his hospital life he proved to be a shrewd observer, keen and enthusiastic in the pursuit of clinical medicine. It was a disappointment to his London friends, as it must have been to himself, that his career at Manchester was so abruptly cut short, from no fault of his own.

THE medical profession has lost one of its oldest members by the death of WILLIAM HENRY FREEMAN, M.R.C.S., L.S.A., which occurred at his residence at Hove on December 15th, 1916, in his 94th year. He was the second son of Joseph and Mary Bell Freeman and was born in 1823 at 20, Spring Gardens, London, where his father was a well-known medical practitioner. William Henry Freeman was educated at King's College School and at King's College, St. Thomas's, and St. George's Hospitals. He was apprenticed to his uncle, Joseph Henry Green, who was twice President of the Royal College of Surgeons and in after life the friend and literary executor of the poet Coleridge. W. H. Freeman became M.R.C.S. in 1845 and L.S.A. in 1846. He began in 1847 to assist his father, whom he ultimately succeeded, in his practice in Spring Gardens, then a residential neighbourhood, and they had to do with many interesting and important people. When Spring Gardens and New Street were given up to Government offices he moved to St. George's Square, and on retirement left London for Hove, where he passed the last eighteen years of his life, deriving fresh vigour from its sunshine and bracing air. He was a member of the British Medical Association and Governor of the Royal Medical Benevolent College, as it used to be styled, and had been a director of the Society for the Relief of the Widows and Orphans of Medical Men. He was fond of talking of old times, and of telling how the students used to sit outside the dissecting room at King's, which then opened on to the river, smoking their pipes and watching the boats pass by; of old St. Thomas's Hospital in the Borough, which in those days had three residents only—the apothecary and two house-surgeons, and how beefsteaks and porter were sent in for the delectation of the latter from the adjacent public-house—the forerunner of the Students' Club of our own day. He talked of the horrors of mercurial treatment in those remote days, when the efficiency of the drug was estimated by the amount of salivation it caused in the unfortunate patient. He had seen Sir Astley Cooper as a boy, and in later life he knew all the consultants of the period of Sir William Gull and thereabouts. He married in 1856 Emily, daughter of the late John Carrick of Southgate, and his widow and five children survive him. His eldest brother died a surgeon in the service of the Honourable East India Company, and his eldest son joined the R.A.M.C. as soon as he had qualified.

DR. JAMES GOWANS, who died at his residence at Broughty Ferry, Forfarshire, on January 15th, was the son of the Rev. James Gowans of Brechin, and was in his 67th year. He received his medical education at the University of Glasgow, where he graduated M.B., C.M. in 1876. He subsequently filled the offices of visiting surgeon to the Newcastle-upon-Tyne Dispensary and resident physician to the Glasgow Western Infirmary. He settled in Broughty Ferry in 1879, where his skill and genial manner won for him a large practice and many friends. Dr. Gowans, who was a warm advocate of outdoor recreation, was an enthusiastic golfer.

DR. CHARLES MATTHEW BRADY died on January 19th while proceeding on a tram car to the Royal Albert Edward Infirmary, Wigan, to which institution he was consulting surgeon. After receiving his education at the Ledwich School of Medicine, Dublin, he took the diplomas of L.R.C.S.I. in 1879 and those of L.A.H.Dub. and L.M. of Coombe Hospital, Dublin, in the following year. He subsequently held the post of resident surgeon at the Jervis Street Hospital, Dublin. He went to Wigan between thirty and forty years ago. He was a member of the British Medical Association and an ex-president of Wigan Medical Society. For many years he had been a member of the old Wigan School Board, and was a member of the Wigan County Borough Insurance Committee. He was one of the founders of the Wigan Golf Club, of which he was a vice-president. He leaves a widow and three children.

Medical News.

THE Central Committee of the German Red Cross has undertaken to make a collection of pictures dealing with the activities of the Red Cross, including portraits of officials.

COLONEL CUTHBERT WALLACE, C.M.G., A.M.S., Assistant Surgeon to St. Thomas's Hospital and at present Consulting Surgeon with the British Expeditionary Force in France, has chosen gunshot injuries of the abdomen as the subject of the course of three Lettsomian lectures which he will deliver before the Medical Society of London next March.

MAJOR JOHN BRUCE, R.A.M.C., will give a short lecture and demonstration on the treatment of scabies with sulphur vapour at the meeting of the Dermatological Section of the Royal Society of Medicine, at 5 p.m., on Thursday, February 15th.

THE Ashby-de-la-Zouch Guardians have adopted a resolution urging the Government to promote legislation to ensure that a medical man shall not be liable to action for libel if he warns the responsible members of a family of a patient suffering from venereal disease of the nature of the disease and the danger of infection.

A NEW Italian periodical, dealing as its title, *Le Malattie del Cuore*, imports, with diseases of the heart, made its first appearance on January 1st. It is published monthly at Genoa (Via Frugoni, 13) under the direction of Professor F. Mariani. The issue of February 1st is entirely devoted to the cardiology of the soldier.

THE French Minister of the Interior has appointed a committee to investigate all questions relating to prostitution and the prophylaxis of venereal diseases. The chairman is Dr. Peyrot, senator and member of the Academy of Medicine. Among the other members of the committee are Dr. Chautemps, senator; Drs. Doizy and Delom-Sorbé, deputies; Dr. Faivre, inspector-general of administrative services; M. de Casabianca, deputy procurator-general at the Paris Court of Justice; M. Paoli, general secretary of the prefecture of police, with various officials of the departments of public assistance and hygiene in the Ministry of the Interior, and Drs. Chantemesse and Renault as technical advisers.

AN inquest was held at Paddington on January 27th with regard to the death of Lieutenant-Colonel C. W. F. Gorrell, C.A.M.C., aged 45. Dr. Spilsbury gave evidence that death was due to prussic acid poisoning. Lieutenant-Colonel M. Alexander, Assistant Judge-Advocate-General to the Canadian Force, said that an inquiry had been held last September into the administration of the Canadian Hospital at Cliveden, of which the deceased was commanding officer. Certain irregularities were discovered, and a general court-martial was held, but only slight breaches of discipline were established. At the request of the Red Cross Society instructions were given that

Lieutenant-Colonel Gorrell should not leave England, though as he had been relieved of his commission, having been asked to resign, he was anxious to return to Canada. It was stated in evidence that about a month ago he had a stroke, had suffered from sleeplessness, and was neurotic. A verdict of suicide during temporary insanity was returned.

Letters, Notes, and Answers.

Authors desiring reprints of their articles published in the British Medical Journal are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

The telegraphic addresses of the British Medical Association and Journal are: (1) EDITOR of the British Medical Journal, *Attiology, Westrand, London;* telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* British Medical Journal *are devoted will be found under their respective headings.*

LETTERS, NOTES, ETC.

Dr. J. H. L. Cumpston, Director of Quarantine, Federal Quarantine Bureau, Spring Street, Melbourne, desires to complete a set of the annual reports of the Medical Officer to the Privy Council, issued prior to 1874. Through the courtesy of the Local Government Board he has obtained a number of the volumes, but the Board is unable to obtain the first report, and the third to the ninth inclusive. The Director is anxious to hear of the existence of copies of the missing reports.

Appendicitis and Enamelled Ware.

Dr. Josiah Oldfield (Bromley, Kent) writes: Your correspondents who draw attention to the possible relation between the modern use of enamelled ware and the great increase in appendicitis assume, I think rather unfairly, that any great amount of broken enamel gets into the food that is actually eaten. Owing to their weight, bits of enamel would fall to the bottom of the vessel, and generally be cast away with the dregs or be removed with the straining which takes place so extensively in cooking. None the less, the actual danger of swallowing for any length of time spicules of broken enamel can be adduced from one of the methods of poisoning in bygone ages, when powdered glass was administered with the food with fatal results. Those who have had to do with the management of horses in camp have learned during the last two years also the great danger of their picking up sharp sand with their oats and hay. While the danger of enamel ware would be real if carried to any excess, it seems hardly likely that an occasional spicule here and there would cause any serious injury, unless the intestine were filled with pathogenic material at the time when the actual scarification takes place. The moral, therefore, is to keep the intestinal contents physiologic by a correct dietary rather than give up the use of enamel ware.

Influence of Absolute Rest in the Treatment of Syphilis.

Dr. J. Lewis Thomas (Newport, Mon.) writes: As the treatment of syphilis is attracting much attention these days it is highly desirable to have simple facts in place of Continental hypothesis and dangerous complicated procedures, so the history of two cases may be of interest.

Some years ago a soldier, K., was discharged from the army with advanced and extensive tertiary syphilis. He was told that if the thorough treatment of the army surgeons had not been successful there was not much hope of a better result at the hands of the private practitioner. He was ordered a solution of mercuric chloride and potassium iodide with aromatic spirits of ammonia and tincture of nux vomica, and was told to lead an open air life and take a generous diet. His condition got steadily worse, and at last he took to his bed apparently to die. The usual "change of doctor" took place with no better result. Being called in again I put him once more on the same mixture, with the astonishing result that within three months the man was working in the mine with all his wounds healed. Within twelve months he rashly married and his wife gave birth to an apparently healthy child.

This case was vividly recalled by that of Mrs. T., who was sent to me as a case of advanced pulmonary and osseous tuberculosis. As the ulceration looked very much like tertiary syphilis the woman was put on the same mixture, which she took, there is every reason to believe, quite faithfully. Her case went from bad to worse, but at the request of her medical attendant she was taken into hospital to die as a tuberculosis case, although examination of the sputum for the tubercle bacillus was negative. The same mixture was prescribed and faithfully taken. In less than four months she was once more in the bosom of her family, having gained over 2 st. in weight and "looking the picture of health," as her surprised friends put it. Eighteen months have passed, and she still "enjoys very good health."

Supernumerary Nipples.

Surgeon-Major Noble, V.D. (Kendal) reports that during his examination of over 5,000 recruits he met with two cases, within a few weeks of one another, of supernumerary nipples; both were on the right side, exactly 2 in. below the normal nipple, and each had a very faintly marked areola. This experience would seem to confirm the opinion expressed by certain authorities that supernumerary nipples are not so uncommon as is supposed. If serving no other useful purpose, they are, at any rate, valuable as identification marks for recruits!

The Title of "Doctor" and the "Personality."

Dr. G. T. Cregan writes: It cannot but strike one how often, when reports are given of medical evidence in newspapers, etc.; or of lectures given or statements made by medical men, that the paragraph begins by "A doctor said . . ."; or "The medical officer certified . . ."; or "The doctor in attendance was of the opinion that . . ." We are all agreed that the medical profession is the silent profession, but this reticence is apt to become deteriorating instead of uplifting if carried too far. It is surely much more dignified to read that Dr. X., who was in attendance, said . . .; or that Lieutenant, Captain, or Major X., when asked his opinion, said . . . than to have nothing to represent one's personality than the mere trade-mark of the profession, which, after all, holds good in the case of a candlestickmaker or any other of the small callings which demand but little of one's initial brain capacity. Let every medical practitioner insist or instruct in inquests or similar cases that his evidence is not to be dismissed by a mere professional nomenclature, but that he is as much entitled—and, as all of us feel certain, a great deal more—to the insertion of his own name and surname in the report and so obviate the impression on reading that some one who is a three-named hall-porter has priority to the name of his christening before the medical man, who, when the case is sifted out, has always contributed to the crux of the issue.

The Price of Skill.

Dr. J. R. S. Robertson (Hayling Island, Hants) writes: Your small article on the "Price of Skill" in your issue of January 27th reminds me of an answer given by the late Professor McHardy which bears out fully the purport of your article. The professor had just removed the eyeball of the relative (a wealthy woman) of a gentleman who had asked him the amount of his fee. He replied, "Five pounds." "Dear me," said the gentleman, "that is very little." The professor added, "Five pounds for doing the operation, one hundred pounds for knowing how to do it—one hundred guineas." This was paid without a murmur.

A Prolific Frenchwoman.

Napoleon, when asked by Madame de Staël whom he considered the greatest woman that ever lived, replied, to the discomfiture of the conceited lady, "The one who had the most children." The great captain, who used to go round among the women of his court with the exhortation *Faites-moi des soldats*, would have approved of the patriotic fecundity of a woman living in a small village of the Somme. Her story is told by Dr. Henri Raymondaud in *Paris médical* of December 16th, 1916. Marie Dehen was born at Monsures in 1847 and bore her first child at the age of 18 and her last at 49. The sum of her contribution to the population of France was thirty-two, of whom eighteen were boys and fourteen girls. Eight of the former and seven of the latter are still alive. The others died in childhood. She had three miscarriages. As her periods did not cease till she was 60, she might have continued her good work still further but for the death of her second husband. Only at the birth of her first child did she have the assistance of a doctor; his ministrations taught her all she wanted to know, and in all her subsequent confinements she managed for herself. She got up on the day after the happy event and carried the baby in her apron to church for baptism. Her experience has led to her employment as the local midwife, an occupation which she varies with that of tender of cows. Her surviving offspring, though quite healthy, have given no proof of remarkable fecundity, with one exception. A daughter who married at 25 and is now 35 has had ten children in ten years and now awaits the arrival of the eleventh. Marie Dehen is known among her own people as "the woman with thirty-five children." The facts may be accepted without question, as they are recorded in the registers of the *Mairie* and the parish.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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An average line contains six words.

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Note.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.